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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-third Meeting
Montreal, 27– 31 May 2019

PROJECT PROPOSALS: CHINA

This document consists of the comments and recommendations of the Fund Secretariat on the following project proposals:

Phase-out

- HCFC phase-out management plan (stage I): UNDP, UNEP, UNIDO, World Bank, Germany, and Japan

Room air-conditioning manufacturing – revised progress report UNIDO
- HCFC phase-out management plan (stage II): UNDP, UNEP, UNIDO, World Bank, Germany, Italy and Japan

Extruded polystyrene foam sector plan – third tranche UNIDO and Germany

Industrial and commercial refrigeration and air-conditioning sector plan – third tranche UNDP

Refrigeration servicing sector plan and national enabling programme – third tranche UNEP, Germany and Japan

Solvent sector plan - third tranche UNDP

HCFC PHASE-OUT MANAGEMENT PLAN (STAGE I) (ANNUAL PROGRESS REPORT) (UNDP, UNEP, UNIDO, World Bank, Germany, and Japan)

Note by the Secretariat

Background

1. At its 64th meeting, the Executive Committee approved, in principle, stage I of the HPMP for China for the period 2011 to 2015 at the amount of US \$265 million (excluding agency support costs), associated with extruded polystyrene (XPS) foam, polyurethane (PU) foam, industrial and commercial refrigeration and air-conditioning (ICR), room air-conditioning manufacturing (RAC) and refrigeration servicing sector plans, the national enabling programme and the national co-ordination plan. The Committee also decided that the solvent sector, at a maximum level of funding of up to US \$5,000,000, (excluding support costs), could be considered at the 65th meeting (decision 64/49). With the approval of the solvent sector plan at the 65th meeting (decision 65/36), the overall funding for stage I of the HPMP for China amounted to US \$270,000,000.

2. The Agreement between the Government of China and the Executive Committee was updated several times and finalized at the 67th meeting, reflecting the newly established HCFC baseline for compliance in China, the change in responsibility of co-operating agencies, and the established agency support costs (decision 67/20).

3. To ensure compliance with the Montreal Protocol by China, the 2013 and 2015 HCFC consumption control targets in the six sector plans are shown in Table 1.

Table 1. HCFC consumption limits and targeted phase-out amount in consumption sectors for stage I of the HPMP for China

National/Sectoral level	2013 (ODP tonnes)		2015 (ODP tonnes)	
	Max. allowable consumption	Phase-out amount	Max. allowable consumption	Phase-out amount
National	18,865	n/a	16,979	n/a
Sector plans				
XPS	2,540	338	2,286	254
PU	5,392	673	4,450	942
ICR	2,403	224	2,163	240
RAC	4,109	176	3,698	411
Solvent	494	30	455	39
Servicing	n/a	61	n/a	0
Total	n/a	1,502	n/a	1,886

4. All tranches associated with the sector plans have been approved as listed in Table 2.

Table 2. Dates of approvals of sector plans of the HPMP for China

Sector plan	Meeting of the Executive Committee								
	64 th	65 th	68 th	69 th	71 st	72 nd	73 rd	74 th	75 th
XPS	First			Second	Third		Fourth		Fifth
PU	First		Second		Third*		Fourth		Fifth
ICR	First		Second		Third		Fourth		Fifth
RAC	First		Second		Third		Fourth		Fifth
Solvent		First			Second				Third
Servicing	First		Second			Third		Fourth	Fifth

* Approved on an exceptional basis on the understanding that funding would be disbursed by the Treasurer to the World Bank only after the Secretariat had accepted as sufficient information provided by the World Bank to the effect that disbursement of 20 per cent or more of the second tranche to final beneficiaries had been achieved. Funds were transferred from the Treasurer to the World Bank in January 2014.

Annual progress reports

5. At the 75th meeting, in approving the last tranches of the six sector plans included in stage I of the HPMP, the Executive Committee requested the Government of China and the relevant implementing agencies to submit *inter alia* progress reports on the implementation of the work programme associated with the final tranche of each sector on a yearly basis until the completion of the sector plan¹.

6. At the 82nd meeting, on behalf of the Government of China, UNDP, UNEP, UNIDO, the World Bank, and the Governments of Germany and Japan submitted annual progress reports on the implementation of the work programme associated with the final tranche for the XPS foam, PU foam, ICR, RAC and servicing sector plans associated with stage I of the HPMP. A progress report on the solvent sector plan was not included as stage I had already been completed. In considering the annual progress reports, the Executive Committee decided *inter alia*:

On monitoring, reporting, verification and enforcement under stage I of the HPMP for China

Decision 82/65: To request the Government of China, through the relevant implementing agency:

- (a) To submit, at the 83rd meeting, a review of the current monitoring, reporting, verification and enforcement systems in line with its Agreements with the Executive Committee on the country's HCFC phase-out management plan and HCFC production phase-out management plan, including information on the organizational structure and capacity at the national and local levels that demonstrated how the long-term sustainability of the phase-out of HCFCs in the consumption and production sectors was being ensured and on the efforts to address any illegal trade in those substances; and
- (b) Further to submit, at the 83rd meeting, a progress report regarding actions taken with a view to strengthening of legislation on ODS and implementation thereof in China.

On the annual report of stage I of the PU rigid foam sector plan

Decision 82/67(c): To request the Government of China and the World Bank to prepare for the 83rd meeting a desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under the stage I of the HPMP and a verification methodology that included random sampling in order to ascertain whether ODS that had already been phased out had been or were being consumed at those enterprises.

On the annual report of stage I of the RAC manufacturing sector plan

Decision 82/69(b): To request the Government of China and UNIDO to submit, at the 83rd meeting, a revised progress report on implementation of the RAC sector plan under stage I of the HPMP in light of the guidance provided by the Executive Committee at its 82nd meeting.

On the annual report of stage I of the refrigeration servicing sector plan

Decision 82/70(c): To request the Government of China, UNEP and the Government of Japan to submit the project completion report (PCR) at the first meeting in 2019.

¹ Decisions 75/29(a), 75/54(b), 75/55(b), 75/56(b) and 75/57(b).

Submission to the 83rd meeting

7. In response to the decisions adopted at the 82nd meeting, on behalf of the Government of China:
- (a) UNDP and the World Bank submitted the reports requested by decisions 82/65 and 82/67(c), respectively, which are discussed in document UNEP/OzL.Pro/Excom/83/11/Add.1;
 - (b) UNIDO submitted the revised progress report on the implementation of the RAC sector, which is included in the present document; and
 - (c) UNEP submitted the PCR for stage I of the refrigeration servicing sector plan, which is included in the present document.

HPMP (stage I): RAC sector (UNIDO)Progress report on the implementation

8. On behalf of the Government of China, UNIDO submitted a revised progress report on implementation of the room air-conditioning sector plan under stage I of the HPMP, in line with decision 82/69(b). To facilitate the Executive Committee's review, changes to the document presented to the 82nd meeting **are shown in bold**.

9. As of **1 April 2019**, contracts for the conversion of 18 R-290 RAC lines, eight R-410A RAC lines and three R-290 compressor lines had been signed. A total of 10,813.7 metric tonnes (mt) of HCFC-22 will be phased once the conversion of those lines have been completed, of which 10,488.1 mt are associated with Article-5 ownership. The phase-out of 325.6 mt of HCFC-22 associated with non-Article 5 ownership was funded from sources outside the Multilateral Fund. Another 240 mt of HCFC-22 were phased out through the demonstration project at Midea approved at the 61st meeting.

10. Of the 18 R-290 RAC lines, **17** have been converted **and** completed national acceptance; **the remaining line is expected to finish its conversion and national acceptance in 2019**. All eight R-410A RAC and three R-290 compressor lines have been converted and completed national acceptance. The status of conversions as of **1 April 2019** is presented in Table 1.

Table 1. Progress in the implementation of the RAC sector plan in China

Type of lines	Total	Converted	National acceptance	HCFC-22 consumption (mt)
R-290 RAC	18	17	17	7,827.3
R-410A RAC	8	8	8	2,986.4
R-290 compressor	3	3	3	n/a
Total	29	28	28	10,813.7

11. The following technical assistance (TA) activities were implemented:

- (a) Completed research on R-290 technology, including experiments and risk assessment on leakage of R-290; performance optimization of R-290 compressor based on reduced lubricant use; and refrigerant charge reduction through the use of microchannel technology;
- (b) Completed research on existing efficiency codes and standards² on refrigerants uses in 2017;
- (c) Public awareness and consultation activities were conducted, including an Ozone-to-Climate (O2C) roundtable to raise awareness of R-290 technology and one event to promote R-290 air conditioners and to raise awareness of the technology at two residential communities in Beijing; and an international workshop on R-290 technology development in the RAC sector; **and**
- (d) **An international workshop on R-290 technology development in the RAC sector, including performance promotion, safety measures, new compressors, and the development of international standards.**

² An energy efficiency standard for RAC is currently in place in China (GB 4706.32).

12. The converted lines continue to have limited manufacturing output: approximately **64,356** R-290 split units and **1,037,000** R-290 compressors, **including 170,000 for export**, have been sold **through March 2019**. **Incremental operating costs (IOCs) related to the sales of R-290 units have not yet been disbursed as the supplementary agreements on IOC with all but three of the beneficiaries apply to products manufactured before 31 December 2017**. One of the three enterprises with a current IOC agreement sold 4,952 grade 2 energy efficiency, fixed-speed units and 12 grade 2 energy efficiency, inverter units; the resulting payment of 1,489,920 RMB (US \$221,220) is in process.

Level of fund disbursement

13. As of **April 2019**, of the US \$75,000,000 approved, US \$60,727,617 (81 per cent) had been disbursed by UNIDO and US \$46,793,169 (62 per cent) had been disbursed by FECO to the beneficiaries. Table 2 shows the disbursement by tranche in the RAC sector.

Table 2. Disbursement (US \$) by tranche in the RAC sector

	Tranche 1	Tranche 2	Tranche 3	Tranche 4	Tranche 5	Total
MLF Funding*	36,430,000	9,200,000	8,495,000	9,625,000	11,250,000	75,000,000
Disbursed by UNIDO	32,786,917	8,316,800	7,608,900	8,662,500	3,352,500	60,727,617
Committed by FECO	36,430,000	9,200,000	8,434,000	9,625,000	11,175,000	74,864,000
Disbursed by FECO	24,166,608	7,329,616	7,045,859	6,328,800	1,922,286	46,793,169

* Excluding agency support costs

14. Table 3 shows the allocation, disbursement and remaining funding by activity in the RAC sector.

Table 3. Allocation, disbursement and remaining funding (US \$) by activity in the RAC sector

Description		Allocation	Disbursement	Balance
Production lines conversion	R-290 (ICC)*	35,410,952	27,842,490	7,568,462
	R-290 (IOC)	20,865,066	2,416,502	18,448,564
	R-410a	4,548,219	4,165,578	382,641
	R-290 Compressor	4,112,902	4,112,902	-
Technical assistance	Technical R&D**	2,221,474	2,210,711	10,763
	Standards	669,757	288,879	380,878
	MIS*** and quota management	250,000	179,626	70,374
	Training	100,000	28,841	71,159
	Public awareness	360,000	311,857	48,143
	Technical communication	204,500	189,704	14,796
	Verification	520,580	481,174	39,406
Management fee	FECO	4,236,550	3,374,145	862,405
	CHEAA****	1,500,000	1,190,760	309,240
Total		75,000,000	46,793,169	28,206,831

* ICC = Incremental capital cost

** R&D = Research and development

*** MIS = Management information system

**** CHEAA= China Household Electric Appliances Association

Remaining activities in the RAC sector plan

15. The following activities will be implemented in 2019: continuation of HCFC-22 quota enforcement; **completion of conversion and national acceptance at the remaining R-290 line**; verification of completed conversion projects; and payment of IOCs based on a revised IOC incentive scheme. **Regarding the payments for IOCs, as the contracts for IOC payments with most manufacturers have or will soon expire, the unpaid IOCs have been returned to the project account for reallocation. Based on the proposed IOC incentive scheme and sales of R-290 units by the**

beneficiaries, a new contract will be signed. IECO and CHEAA will review progress in the sale of R-290 ACs in July 2019 to develop a new IOC incentive scheme and R-290 promotion plan. The planned completion date of the first through the third tranche is July 2019, while the fourth and fifth tranches will be completed by December 2019.

Secretariat's comments

HCFC consumption

16. The consumption of HCFC-22 in the RAC sector in 2017 was 55,000 mt (3,025 ODP tonnes), which is lower than the maximum allowable consumption in the Agreement between the Government of China and the Executive Committee (Table 4). The 2018 quota for the sector has been issued at 47,502 mt (2,612.6 ODP tonnes), which is lower than the maximum allowable consumption specified in the Agreement. **At the time of finalization of the present document, the estimated 2018 consumption for the sector was not available. The 2019 quota for the sector has been issued at 48,941 mt (2,692 ODP tonnes).**

Table 4. HCFC-22 consumption and targets for the RAC sector

RAC sector plan		2009	2010	2011	2012	2013	2014	2015	2016	2017
Consumption*	Mt	71,500	77,900	74,700	72,600	68,900	62,000	54,000	55,000	55,000
	ODP tonnes	3,932.5	4,284.5	4,108.5	3,993.0	3,789.5	3,410.0	2,970.0	3,025.0	3,025.0
Max. allowable consumption	Mt	n/a	n/a	n/a	n/a	74,700	74,700	67,231	67,231	67,231
	ODP tonnes	n/a	n/a	n/a	n/a	4,108.5	4,108.5	3,697.7	3,697.7	3,697.7

*Data from the progress report

Status of implementation

17. Notwithstanding continued efforts by the Government of China, CHEAA, industry and UNIDO, the production of R-290 equipment on the converted lines remains very low. To address the low production, **at the 82nd meeting** the Government of China proposed changes to the IOC incentive scheme and sought a commitment from manufacturers to produce and sell R-290-based equipment. Accordingly, eight manufacturers committed to selling at least 220,000 R-290-based units for the domestic market and for export to Article 5 countries by mid-2019. While noting this commitment with appreciation, the Secretariat noted that the sales would account for approximately 3 per cent of the capacity converted under stage I, and a negligible fraction of the R-410A sales.

18. Among the challenges that contribute to the low production, are the longer installation time for an R-290-based unit; domestic and international standards; and the higher cost relative to other products that are already mass-produced and benefit from economies of scale. UNIDO emphasized that the longer installation time than that for HCFC-22- and R-410A-based equipment was due to the need for additional safety precautions. From a technical perspective, it was not clear to the Secretariat why installation of R-290 AC equipment would take longer given that the equipment was shipped with the refrigerant charge wholly contained within the outdoor unit, and the connection of the indoor and outdoor units was accomplished without brazing. Moreover, increasing the installation standards of HCFC-22- and R-410A-based equipment to be more on par with that of R-290-based equipment (e.g., evacuation of the indoor unit) would improve the performance and energy efficiency of that equipment.

Changes to the IOC incentive scheme

19. While the continued efforts by the Government and all stakeholders under both stage I and stage II are expected to accelerate market acceptance of R-290-based equipment, the remaining IOCs (i.e., US \$18,448,564) would not be paid to enterprises until sales of the R-290-based equipment had been achieved. Given this situation, the Government of China had proposed **at the 82nd meeting** the following changes to the IOC incentive scheme:

- (a) IOCs will only will only be provided to split AC units as these units need more promotion; factory-sealed units (e.g., dehumidifiers, portable ACs units) are already accepted by the market and no longer will be compensated with IOCs;
- (b) IOCs of a specific beneficiary will not be limited, and will be paid according to the sales amount (i.e., enterprises that sells R-290 split AC units faster will receive more IOCs); and
- (c) IOCs will be paid in accordance to sales of R-290 split AC units and based on the energy efficiency of the equipment, according to the Table 5.

Table 5. Proposed IOC incentive scheme (RMB)*

Split units	Criteria	
	Inverter (RMB)	Fixed-speed (RMB)
Local sales		
Grade 1 energy efficiency	600	500
Grade 2 energy efficiency	360	300
Grade 3 energy efficiency	200	150
Export to Article 5 countries	360	300

*RMB= renminbi

20. **The Government of China submitted and maintained the same IOC incentive scheme as it had at the 82nd meeting to the present meeting.**

21. **As noted at the 82nd meeting**, while the Secretariat considers the proposed scheme to be a constructive approach to encouraging sales, in particular focusing the IOCs only on split units rather than also including factory-sealed units, which have already gained market acceptance, and encouraging the market uptake of more energy efficient equipment, the Secretariat does not consider the IOC values proposed to be consistent with decision 60/44(f)(viii). Following the proposed incentive scheme, IOCs would vary between US \$77.63/kg and US \$18.85/kg.³ Furthermore, if sales are dominated by the most energy efficient models, which is expected, the committed sales of 220,000 units would fully utilize all the remaining IOCs; assuming sales are equally split between the different categories in Table 5, the converted lines would have to sell approximately 357,000 units to disburse all the remaining IOCs. In either case, the sales would constitute a small proportion of the capacity converted to R-290 under stage I, and a negligible fraction of the R-410A sales. While IOCs for higher energy efficiency equipment could be above the US \$6.30/kg threshold specified in decision 60/44(f)(viii), IOCs were assessed based on the conversion of approximately seven million units/year. The Secretariat therefore considers it important that IOCs not be fully disbursed until the converted capacity is utilized.

22. Alternative approaches to the proposed IOC incentive scheme that could yield more sustainable manufacturing of the production lines that have been converted and that are currently idle due to the low market penetration of the converted AC units could be considered. For example, IOCs could be provided at one third of the values proposed for the first 220,000 units sold, resulting in a disbursement between approximately US \$3.7 million and US \$6.4 million; the next 500,000 units sold could receive IOCs at one sixth of the values proposed, resulting in further disbursement between approximately US \$4.2 million and

³ Based on the exchange rate at the time of finalization of the present document, and an average charge of 1.15 kg/unit.

US \$7.2 million; the next, 1,000,000 units sold could receive IOCs at one twelfth of the values proposed (i.e., between US \$6.30/kg and US \$1.57/kg), resulting in further disbursement between approximately US \$4.2 million and US \$7.2 million; and the remaining IOCs could be disbursed based on sales of the remaining approximately 5 million units. **Other approaches might be possible.**

Extension of the completion date of the project

23. Decision 75/57(b) calls for the submission of the stage I RAC project completion report six months after the operational completion of the sector plan and no later than the final meeting of the Executive Committee in 2019. Based on the IOC incentive scheme proposed, the Government of China did not consider that an extension was required. The Secretariat does not consider it realistic that sales of R-290-based split ACs would reach approximately seven million before the last meeting of 2019. **Depending on the IOC incentive scheme used, the completion of the project may need to be extended.**

Conclusion

24. The RAC sector plan continues to progress, with 17 R-290 AC lines, eight R-410A AC lines, and three R-290 compressor lines converted. The total phase-out in the sector of all the lines that have signed contracts is 10,813.8 mt of HCFC-22, which is larger than the anticipated phase-out of 10,670 mt from stage I. The demonstration project at Midea phased out an additional 240 mt of HCFC-22. The disbursement from FECO to the final beneficiaries is 62 per cent. Notwithstanding continued and commendable efforts by the Government of China, CHEAA, industry and UNIDO, the production of R-290 equipment on the converted lines remains very low, reflecting the local and global market penetration.

25. The Secretariat recalled that the Government of China, rather than converting to R-410A, had chosen to convert the 18 lines under stage I to R-290, which is a more challenging technology and requires considerable work to achieve market acceptance. The commitment by manufacturers to sell a minimum number of R-290-based units by mid-2019 is a meaningful step that will help the market introduction of R-290-based equipment; **however, an increase in the rate of sales would be needed for manufacturers to meet their commitment.** The Secretariat considers it important that momentum not be slowed, and therefore supports the use of an innovative IOC incentive scheme to encourage sales of more energy efficient equipment. Finally, the Secretariat appreciates that manufacturers would wish to use caution during initial installations; it is expected that as installers become familiar with R-290 equipment, including through the trainings that are conducted under both stage I and stage II, the difference in installation time between R-290-based equipment and HCFC-22- and R-410A-based equipment will decrease. Accordingly, the Secretariat considers it appropriate that IOCs above the level specified in decision 60/44(f)(viii) could be provided for a limited number of sales, with IOCs gradually decreasing with increasing sales so that all IOCs were disbursed once the converted capacity is utilized. **The Government intends to develop a new IOC incentive scheme in July 2019 after reviewing progress in the sale of R-290 ACs. The Executive Committee may wish to provide guidance on how the IOC incentive scheme should be modified.**

Secretariat's recommendation

26. The Executive Committee may wish to consider:

- (a) Noting the **revised** progress report on the implementation of the room air-conditioning (RAC) sector plan of stage I of the HCFC phase-out management plan (HPMP) in China submitted by UNIDO;
- (b) **Whether to endorse the incremental operating cost incentive scheme proposed by the Government of China, or to propose a revised scheme.**

HPMP (stage I): refrigeration servicing sector (UNEP, Japan)

27. In line with decision 82/70(c), UNEP submitted the PCR for stage I of the refrigeration servicing sector plan. The PCR was reviewed by the Secretariat confirming that operational completion was achieved in December 2018, and that the PCR was found satisfactory. It was noted by the Secretariat and explained by UNEP that financial information in the PCR is preliminary, as outstanding obligated payments still need to be done. UNEP will provide a full financial report by December 2019 following guidelines for financial completion, by which time balances from stage I of the HPMP will be known.

Secretariat's recommendation

28. The Executive Committee may wish to request the Government of China and UNEP to submit to the 84th meeting the updated information on the level of funds disbursed and potential balances to be returned to the Multilateral Fund by the 85th meeting.

HCFC PHASE-OUT MANAGEMENT PLAN (STAGE II, SECOND TRANCHE) (UNDP, UNIDO, Germany and Italy)

Overarching strategy of stage II of the HPMP for China

Background

29. Between the 76th and 79th meetings, the Executive Committee approved stage II of the of the HCFC phase-out management plan (HPMP) for China with associated sectors plans as follows:

- (a) At the 76th meeting, approved in principle the solvent sector plan for the period 2016 to 2026, for the complete phase-out of all HCFCs in that sector, in the amount of US \$44.8 million, plus agency support costs;
- (b) At the 76th meeting, approved in principle the refrigeration and air-conditioning servicing sector and enabling programme component for the period 2016 to 2020, to reduce HCFC consumption by 734.0 ODP tonnes, in the amount of US \$20.29 million, plus agency support costs;
- (c) At the 77th meeting, approved in principle stage II of the HPMP for China for the period 2016 to 2026 in the amount of US \$500,100,000, plus agency support costs, to reduce HCFC consumption by 37.6 per cent of the baseline by 2020, which included: the ICR sector plan to reduce HCFC consumption in the sector by 33 per cent by 2020; the RAC sector plan to reduce HCFC consumption in the sector by 45 per cent by 2020; and the PU foam sector and the XPS foam sector plan to achieve the total phase-out of HCFCs in these sectors by 2026; and
- (d) At the 79th meeting, approved the Agreement between the Government of China and the Executive Committee for the implementation of stage II of the HPMP, and set the agency support costs for UNDP, UNIDO, and the World Bank at 6.5 per cent, on the understanding that the agency support costs could be reconsidered at the 81st meeting, and maintained the level of agency support costs for the bilateral agencies and UNEP in place under the current administrative cost regime.

30. The HCFC consumption limits and targeted phase-out amounts for the period of 2016 to 2026⁴ in the six sectors are shown in Table 1.

Table 1. HCFC consumption limits and phase-out in consumption sectors for stage II of the HPMP for China (ODP tonnes)

	Maximum allowable consumption						
	2016-17	2018-19	2020-21	2022	2023-24	2025	2026
National	16,978.9	15,048.1	11,772.0*	n/a	n/a	n/a	n/a
XPS	2,286.0	2,032.0	1,397.0	1,397.0	762.0	165.0	0.0
PU	4,449.6	3,774.5	2,965.7	2,965.7	1,078.4	330.0	0.0
ICR	2,162.5	2,042.4	1,609.9*	n/a	n/a	n/a	n/a
RAC	3,697.7	2,876.0	2,259.7*	n/a	n/a	n/a	n/a
Solvent	455.2	395.4	321.2	321.2	148.3	55.0	0.0
Servicing and enabling component	n/a	n/a	n/a	n/a	n/a	n/a	n/a

⁴ The national HCFC consumption target, as well as the targets for the ICR and RAC sectors for the period 2021 to 2026 would be determined during the submission of stage III of the HPMP.

Phase-out by sector						
	2018	2020	2023	2025	2026	Total
XPS	254.0	635.0	635.0	597.0	165.0	2,286
PU	675.1	808.8	1,887.3	748.4	330.0	4,449.6
ICR	120.1	432.5	n/a	n/a	n/a	552.6
RAC	821.7	616.3	n/a	n/a	n/a	1,438
Solvent	59.8	74.2	172.9	93.3	55.0	455.2
Servicing and enabling component		734.0	n/a	n/a	n/a	734.0
Total	1,930.7	3,300.8	2,695.2	1,438.7	550.0	9,915.4

* This is the national maximum allowable consumption for 2020 only; for the period 2021 to 2026 it will be determined during submission of stage III of the HPMP.

Consideration of the request of tranches of stage II of the HPMP at the 82nd meeting

31. On behalf of the Government of China, UNDP, UNEP, UNIDO, the World Bank and the Governments of Germany and Japan submitted requests for the third tranches of the XPS foam, ICR, solvent and servicing sector plans, and for the second tranche of the PU foam sector plan associated with stage II of the HPMP for China at a total value of US \$29,199,492,⁵ together with an independent verification of HCFC production and consumption in 2017 (World Bank), annual implementation reports covering the activities undertaken so far, and annual implementation plans for the activities to be implemented in 2018-2019.

32. After reviewing the project proposals and documents associated to the third tranche requests for the XPS foam, ICR, solvent and refrigeration servicing sector plans, the Secretariat concluded that all of them had merits to warrant their submission for consideration at the 82nd meeting. The request for the second tranche of the PU foam sector plan, however, was not presented for consideration at the 82nd meeting as no disbursements from the first tranche had taken place at the time of submission.

33. In discussing the tranche requests at the 82nd meeting, several members expressed serious concern at approving additional funding at that meeting given the unexplained emissions of CFC-11 in East Asia. There was also concern expressed about the reliable but incomplete information on possible compliance issues; one member recalled that the Government of China had acknowledged at the Thirtieth Meeting of the Parties that it had identified illegal production of CFC-11. Pursuant to decision XXX/3 more information had been requested on the cause of emissions of CFC-11 and it was suggested that the funding request be deferred until a subsequent meeting of the Executive Committee when more information was available. At the time, China still held over US \$100 million that had not yet been disbursed to beneficiary enterprises; deferring the funding requests, which amounted to US \$29,199,492, should have no significant effect. It was important to demonstrate to the international community that the Multilateral Fund took the issue of the illegal emission of CFC-11 seriously, but any decision to defer the funding should be without prejudice to any further actions to be taken by China.

34. Other members said that care needed to be taken, and that any decision to defer the funding requested should not put into jeopardy the 2020 reduction target for China. Clarification was sought regarding whether any of the US \$100 million that remained to be disbursed had already been committed to fund specific activities, and what portion of the undisbursed funds could be used for other activities required for compliance. It was asked whether all of the funds had already been transferred to the Government of China or whether some of them remained with the implementing agencies, and what the effect on them might be if the present request for funding was deferred. The ongoing investigations into the cause of the emissions of CFC-11 meant that the Executive Committee needed to be cautious when reaching

⁵ The request for the third tranche of the RAC sector plan (US \$18 million) was not submitted to the 82nd meeting because the level of disbursement of funds approved for the second tranche had not reached 20 per cent.

conclusions. It could take several years for all the relevant information to be assembled, and it was important to have clarity on what information was required and a timeline for assembling it.

35. Following the discussion, the Executive Committee agreed to continue deliberations on the issue in the contact group established earlier in the agenda item to discuss stage I of the HPMP for China.

36. Subsequently, the Executive Committee decided, through decision 82/71:

- (a) To request the Government of China, through the relevant implementing agency:
 - (i) To submit, at the 83rd meeting, a review of the current monitoring, reporting, verification and enforcement systems in line with its Agreements with the Executive Committee on the country's HCFC phase-out management plan (HPMP) and HCFC production phase-out management plan, including information on the organizational structure and capacity at the national and local levels that demonstrated how the long-term sustainability of the phase-out of HCFCs in the consumption and production sectors was being ensured and on the efforts to address any illegal trade in those substances;
 - (ii) Further to submit, at the 83rd meeting, a progress report regarding actions taken with a view to strengthening of legislation on ODS and implementation thereof in China; and
- (b) To consider the requests for funding for the subsequent tranches of stage II of the HPMP for China at the 83rd meeting.

Submission to the 83rd meeting

37. In response to decision 82/71, on behalf of the Government of China:

- (a) UNDP submitted the report requested by decision 82/71(a)(i) and (ii), which is discussed in document UNEP/OzL.Pro/Excom/83/11/Add.1.
- (b) UNDP, UNEP, UNIDO, the World Bank and the Governments of Germany and Japan re-submitted requests for third tranches of the XPS foam, ICR, solvent and servicing sector plans and for second tranche of the PU foam sector plan associated with stage II of the HPMP for China as shown in Table 2. The submission included annual implementation reports covering the activities undertaken so far, and annual implementation plans for the activities to be implemented in 2019-2020.

Table 2. Tranche requests of sector plans submitted to the 83rd meeting (excluding agency support costs)

Sector plan (lead and co-operating agency)	Overall funding approved in principle (US \$)	First two tranches approved (US \$)	First two tranches approved as share of overall approved in principle (%)	Funding requested at 83 rd meeting (US \$)	Share of funding approved and requested of total approved in principle (%)
XPS (UNIDO, Germany)	112,786,630	16,514,867	14.6	8,000,000	21.7
PU (World Bank)	141,471,210	7,045,027*	5.0	0**	5.0
ICR (UNDP)	89,144,797	33,368,756	37.4	12,000,000	50.9
RAC (UNIDO, Italy)	89,144,797	31,562,981	35.41	0***	35.4
Solvent (UNDP)	47,262,566	6,599,127	14.0	5,549,492	25.7
Servicing and enabling programme (UNEP, Germany, Japan)	20,290,000	6,329,132	31.2	3,850,000****	49.2

Sector plan (lead and co-operating agency)	Overall funding approved in principle (US \$)	First two tranches approved (US \$)	First two tranches approved as share of overall approved in principle (%)	Funding requested at 83 rd meeting (US \$)	Share of funding approved and requested of total approved in principle (%)
Total	500,100,000	101,419,890	20.3	29,399,492	26.1

* Only one tranche approved in the PU foam sector plan

** Tranche requested but it did not comply with the disbursement threshold

*** Tranche request not submitted to the 83rd meeting

**** This includes combined funding tranches of 2018 and 2019 for the Government of Germany

38. After reviewing the re-submission of the project proposals and documents associated to the third tranche requests for the XPS foam, ICR, solvent and refrigeration servicing sector plans, the Secretariat concluded that all of them had merits to warrant their submission for consideration at the 83rd meeting.

Status and plan of action for the PU foam sector plan

39. The request for the second tranche of the PU foam sector plan did not meet the requirements specified in paragraph 5 of the Agreement. At the time of submission of the request (i.e., 12 weeks before the Executive Committee meeting), no disbursement had taken place, either from the World Bank to IECO or from IECO to the final beneficiaries. Accordingly, this proposal is not being presented for consideration at the 83rd meeting.

40. The World Bank explained the reasons for the delay in the signature of the Grant Agreement between the Government of China and the World Bank, and provided a plan of action to ensure expedited conversions and reductions in HCFC-141b consumption as per the targets established in the Agreement.

41. The signature of the Grant Agreement for stage II of the HCFC phase-out plans (HPMP and HPPMP) was delayed due to administrative and procedural reasons. The Grant Agreement must be signed with the Ministry of Finance (MOF) first, followed by a legal opinion from China, before the project becomes effective and IECO can then start its implementation. Procedures for processing foreign-assisted projects within the MOF changed during the period of late 2017/early 2018; becoming more complex than was the case for stage I, thus generating a delay. Additional delays were due to changes made by the MEE in signing arrangements for withdrawing funds from the special account. Small administrative delays and procedural changes cumulatively led to the need for more time to complete the whole process leading up to disbursement.

42. The Grant Agreement was signed in January 2019 and made effective in March 2019. Since then, IECO has signed a contract with the China Plastics Processing Industry Association (CPPIA) that serves as the Implementation Support Agency for stage II of the PU foam sector plan. IECO is currently in the process of signing sub-grant agreements with the first 11 beneficiary enterprises to implement projects to phase out about 1,200 mt of HCFC-141b. The first payments to these 11 beneficiaries is planned to take place by May 2019.

43. Twenty additional enterprises will sign sub-grant agreements with IECO in 2019. Meanwhile, with the understanding that the second tranche could be approved this year, individual phase-out projects, systems house projects and the new implementation modality targeting the SMEs will be all initiated in 2019. The overall phase-out impact to be achieved through these three types of activities is expected to be up to at least 4,000 mt of HCFC-141b, which would contribute to meeting the 2020 reduction target. In terms of technical assistance activities, IECO plans to start the social and economic impact assessment for planned bans on the use of HCFC-141b as blowing agent in the pipe insulation and solar water-heater sub-sectors. This impact study will be the pre-condition for the promulgation of the bans and would result in additional, unfunded conversions in the relevant sub-sectors.

44. An adjusted tranche distribution of the PU foam sector plan in the Agreement between the Government of China and the Executive Committee was proposed at the 82nd meeting as part of the revised Agreement submitted for the Executive Committee consideration. As the revised Agreement was not considered at the 82nd meeting, it is being resubmitted to the 83rd meeting with no modifications. A section below provides a detailed description of the revised Agreement including all sectors in stage II of the HPMP for China.

Overview of progress

45. An overview of the main achievements in the implementation of stage II of the HPMP include:

- (a) Establishment and continuous implementation of the licensing and quota system to control the overall compliance in each one of the manufacturing sectors, including the application of quota permits to enterprises consuming more than 100 mt of HCFCs per year resulting in compliance with all the manufacturing sector consumption limits during the years of implementation;
- (b) *XPS foam sector*: The contract between IECO and UNIDO for the implementation of the XPS foam sector plan was signed in September 2017. Eleven XPS foam enterprises (4,522 mt of HCFC-22 and HCFC-142b) were identified and ten of them (4,297 mt or 245.43 ODP tonnes of HCFC-22 and HCFC-142b) were verified, signed contracts with IECO for conversion to CO₂-based technology and received first disbursements. Of these enterprises, one (655 mt or 36.03 ODP tonnes) already received and installed the equipment, and five additional (1,899 mt or 109.20 ODP tonnes) already signed procurement contracts with equipment suppliers and are awaiting for the equipment;
- (c) *ICR sector*: Contracts were signed with 12 enterprises for the conversion of 18 manufacturing lines to phase out 2,558.18 mt of HCFC-22 after verification of the baseline consumption and capacity of these lines. The implementation of the conversion projects is progressing and is being closely monitored according to the defined milestones.⁶ Ten lines have completed prototyping, conversion and performance test; one line has completed the design and procurement contract; six lines have completed the design; and one line has just signed the conversion contract and is in the process of design.
- (d) *RAC sector*: Contract between IECO and UNIDO for the implementation of the RAC sector plan was signed in October 2017; FEEO signed contracts with the China Household Electric Appliances Association (CHEAA) and the auditing firm that will independently verify the lines to be converted. Contracts for the conversion of four compressor manufacturing lines with a total production capacity of 5,423,441 units/year and with five RAC manufacturing lines with a total consumption of 2,221 mt of HCFC-22 have been signed. Of the US \$31,562,981 approved, a total of US \$3,454,396 (10 per cent) has been disbursed to the final beneficiaries. No additional activities or disbursements were reported since the 82nd meeting. A progress report will be submitted to the 84th meeting;
- (e) *Solvent sector*: Twenty-four eligible enterprises have signed contracts with IECO. Twenty of these completed equipment procurement process and signed contracts with the equipment suppliers. The remaining four enterprises are preparing for equipment procurement process. The total phase-out associated with these enterprises is 1,176.19 mt (129.38 ODP tonnes) of HCFC-141b. A second batch of 26 enterprises (mostly SMEs)

⁶ The milestones include: signing the conversion contract (30 per cent payment); completion of design and procurement contract (20 per cent payment); completion of prototype manufacture, conversion of lines and performance test (30 per cent payment); and trial production, training, and equipment disposal upon project acceptance (20 per cent payment).

with annual consumption above five mt of HCFC-141b) have been identified with an estimated phase-out of 372 mt (40.92 ODP tonnes) of HCFC 141b; IECO has arranged for the baseline verifications for these enterprises; and

- (f) *Refrigeration servicing sector*: The project cooperation agreement (PCA) for the second tranche of the refrigeration servicing sector and enabling components between UNEP and IECO was signed in September 2018, and funds were subsequently transferred in October 2018. Agreements with three pilot cities (Guangzhou, Shenzhen and Tianjin) with agreed work plans were finalised; a capacity building workshop on enforcing ODS regulations for local EEBs was conducted; agreement and work plan for the national executive agency for the delivery of the technician training programme was finalised; and the terms of reference (TOR) for developing the codes for the servicing and maintenance of air conditioning units and water chillers were finalised and the procurement process and contracts were initiated. The implementation agreement for the Government of Germany's component of the first tranche was signed, and one beneficiary (Chaoshifa supermarket chain) for the demonstration of a CO₂ transcritical system application was identified; six trainers from vocational training centres and six managers/engineers from the cold chain and supermarket sub-sector participated in a study tour on the application of low-GWP refrigerants in the sub-sector. A national training workshop on alternatives to HCFC-22 in the supermarket sector was organised; the TOR and selection criteria for the delivery of technicians' training programme through manufacturers' servicing workshops was finalised; the survey report for the barrier analysis and market mechanism study on HCFC recovery was reviewed and revised for final publication; and awareness raising activities were continued.

Disbursement of funds

46. As of April 2019, of the US \$101,419,890 approved under the first and second tranches, US \$51,139,064 have been disbursed from implementing agencies to IECO, and US \$30,602,616 have been disbursed from IECO to beneficiaries, as summarized in Table 3.

Table 3. Level of disbursement per sector (as of April 2019)

		Tranche 1	Tranche 2	Total
XPS foam sector plan (UNIDO/Germany)				
Funds approved		7,514,867	9,000,000	16,514,867
Disbursements from implementing agencies to IECO	Amount (US \$)	3,757,434	4,366,307	8,123,741
	Disbursement ratio	50.0%	48.5%	49.2%
Disbursements from IECO to beneficiaries	Amount (US \$)	2,031,287	2,313,886	4,345,173
	Disbursement ratio	27.0%	25.7%	26.3%
PU foam sector plan (World Bank)				
Funds approved		7,045,027	-	7,045,027
Disbursement from the World Bank to IECO	Amount (US \$)	-	-	-
	Disbursement ratio	0.0%	0.0%	0.0%
Disbursement from IECO to beneficiaries	Amount (US \$)	-	-	-
	Disbursement ratio	0.0%	0.0%	0.0%
ICR sector plan (UNDP)				
Funds approved		13,368,756	20,000,000	33,368,756
Disbursements from UNDP to IECO	Amount (US \$)	13,368,756	15,819,515	29,188,271
	Disbursement ratio	100.0%	79.10%	87.47%
Disbursements from IECO to beneficiaries	Amount (US \$)	8,591,773	7,753,197	16,344,970
	Disbursement ratio	64.27%	38.77%	48.98%
RAC sector plan (UNIDO)				
Funds approved		15,562,981	16,000,000	31,562,981
Disbursement from UNIDO to IECO	Amount (US \$)	4,309,022	-	4,309,022
	Disbursement ratio	27.7%	0.0%	13.7%
Disbursement from IECO to beneficiaries	Amount (US \$)	3,454,396	-	3,454,396
	Disbursement ratio	22.2%	0.0%	10.9%

		Tranche 1	Tranche 2	Total
Solvent (UNDP)				
Funds approved		2,821,937	3,777,190	6,599,127
Disbursement from UNDP to IECO	Amount (US \$)	2,794,281	3,741,089	6,535,370
	Disbursement ratio	99.0%	99.0%	99.0%
Disbursement from IECO to beneficiaries	Amount (US \$)	2,796,937	2,819,399	5,616,336
	Disbursement ratio	99.1%	74.6%	85.1%
Servicing (UNEP/Germany/Japan)				
Funds approved		3,679,132	2,650,000	6,329,132
Disbursement from implementing agencies to IECO	Amount (US \$)	1,682,660	1,300,000	2,982,660
	Disbursement ratio*	45.7%	49.1%	47.1%
Disbursement by IECO	Amount (US \$)	741,741	100,000	841,741
	Disbursement ratio	20.1%	3.8%	13.3%
Total all sectors				
Funds approved by the Executive Committee		49,992,700	51,427,190	101,419,890
Disbursements to IECO	Amount (US \$)	25,912,153	25,226,911	51,139,064
	Disbursement ratio	51.8%	49.1%	50.4%
Disbursements from IECO to beneficiaries	Amount (US \$)	17,616,134	12,986,482	30,602,616
	Disbursement ratio	35.2%	25.3%	30.2%

*Reference for disbursement in the servicing sector.

47. As at the time of submission of the tranche requests (twelve weeks before the 83rd meeting), the rate of disbursement of funding from IECO to beneficiaries was above 20 per cent in the XPS foam, ICR and solvent sectors. For the servicing sector the disbursement from bilateral and implementing agencies to IECO was above 20 per cent.

Revision of the Agreement for stage II

48. The Agreement between the Government of China and the Executive Committee for stage II of the HPMP was agreed at the 79th meeting (decision 79/35). At the 81st meeting the Secretariat noted that the Agreement would need to be revised to include the level of agency support costs that the Executive Committee might decide at the 81st meeting, and to reflect potential changes in the fund distribution in the PU foam sector plan given the delay in the submission of the second tranche, which would also result in changes to the distribution of the overall funding of stage II of the HPMP. Subsequently, the Executive Committee decided to adjust to 7 per cent the agency support costs associated with the second and future tranches of all sector plans of stage II of the HPMP for China for UNDP, UNIDO and the World Bank; and to revise, at the 82nd meeting, the Agreement for stage II of the HPMP (decision 81/45).

49. In preparation for the 82nd meeting, the Secretariat and UNDP as lead agency discussed a revised Agreement for stage II of the HPMP submitted for consideration, including the following adjustments in Appendix 2-A:

- (a) The Agency support costs for UNDP, UNIDO and the World Bank was adjusted to 7 per cent from the second to the last tranche in line with decision 81/45(a). This adjustment represents an increase of US \$2,162,056 in the agency support costs previously calculated at 6.5 per cent in the Agreement approved at the 79th meeting;
- (b) As the preconditions for the approval of the second tranche of the PU foam sector plan (due at the 80th meeting) had not been fulfilled at the 82nd meeting, there was a two-year delay in the funding to be released for the implementation of this sector plan. The HCFC reduction commitments and duration of the sector plan were not modified, but the value of the 2017 and 2018 tranches (US \$10.6 million and US \$9.0 million) was distributed among the 2019, 2020, 2024 and 2025 tranches;

- (c) As the second tranche of the RAC sector plan due in 2017 was only approved at the 81st meeting (2018) and the third tranche due in 2018 was not submitted to the 82nd meeting in 2018, there is a one-year delay. Accordingly, the remaining tranches of the sector (2018 to 2021) were moved one year (2019 to 2022), having the last tranche in 2022 instead of 2021. Submission of tranche requests will continue to take place at the second meeting of the year, as stipulated in the Agreement; and
- (d) The tranche distribution of the solvent sector plan was adjusted increasing amounts in 2018, 2019, 2020 and 2023, and decreasing amounts in 2021, 2022, 2024 and 2025 to meet the cash flow needed for signing up new enterprises, to ensure timely upon completion of milestones, and to reflect incremental operating cost payments needed once the first set of enterprises had completed their conversions.

50. Upon discussion of the proposed tranche distribution, a few adjustments were made to ensure that the total annual tranche levels were maintained as close as possible to the originally agreed ones.

51. At the 82nd meeting, the Secretariat considered that the adjustments in the tranche distribution in the PU foam and the RAC sectors were in line with the delays incurred and the need for funding in subsequent years. For the solvent sector, the Secretariat had already noted at the 80th meeting that the original tranche distribution might cause difficulties with making expenditures to the 24 enterprises with ongoing projects and the additional 27 SMEs expected to complete verifications of consumption and enter into contracts with IECO during the first quarter of 2019.

52. As the revised Agreement was not considered at the 82nd meeting, UNDP on behalf of the Government of China has re-submitted it for consideration at the 83rd meeting.

53. In preparation for the 83rd meeting, UNDP indicated that there are no modifications to the revised Appendix 2-A of the Agreement discussed at the 82nd meeting. The Secretariat notes that even though the third tranches for XPS foam, ICR, solvent and servicing were not approved at the 82nd meeting (2018), they were still left in 2018. This would allow the Government of China to submit the fourth tranche for these sectors to the 84th meeting if the conditions for release of tranches are fulfilled.

54. As indicated at the 82nd meeting, with regard to the total annual tranche distribution including all sectors in the HPMP, the most significant change can be summarized as a reduction of around US \$37.5 million in 2017 and 2018, offset by increases in future tranches, mostly 2019 (US \$15.7 million), 2020 (US \$10.5 million) and 2022 (US \$10.7 million). The details are presented in Annex II to the present document.

55. The revised Appendix 2-A of the Agreement is presented in Annex I to the present document. The full updated Agreement will be appended to the final report of the 83rd meeting. In addition to the changes above, paragraph 17 was added to show that this updated revised Agreement replaces the one agreed between the Government and the Executive Committee at the 79th meeting.

Tranche progress reports and funding requests

56. Detailed stand-alone progress reports on the implementation of the XPS foam, ICR, solvent and refrigeration servicing sector plans and requests for funding for the third tranches are attached to the Note by the Secretariat. Each report provides a progress report on the implementation of the second tranche; the level of fund disbursement; an implementation plan for the third tranche; comments by the Fund Secretariat; and the recommendation.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) XPS foam sector	Germany and UNIDO (lead)	77 th	100 % in 2026

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	14,604.66 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)					Year: 2017	
Chemical	Aerosol	Foam	Refrigeration		Solvent	Total sector consumption
			Manufacturing	Servicing		
HCFC-22		1,595.00	5,087.50	2,831.55		9,514.05
HCFC-123			12.88	6.95		19.83
HCFC-124				-0.13		-0.13
HCFC-141b		4,008.26			396.00	4,404.26
HCFC-142b		617.50	5.85	43.06		666.41
HCFC-225ca					0.96	0.96

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	19,269.00	Starting point for sustained aggregate reductions:	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	12,161.02	Remaining:	6,704.42

(V) BUSINESS PLAN		2019	2020	2021	Total
UNIDO	ODS phase-out (ODP tonnes)	162.15	187.35	194.58	544.08
	Funding (US \$)	8,560,000	9,890,530	10,272,000	28,722,530
Germany	ODS phase-out (ODP tonnes)	0.00	7.23	0.00	7.23
	Funding (US \$)	0	399,016	0	399,016

(VI) PROJECT DATA			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits			17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)			2,286.0	2,286.0	2,032.0	2,032.0	1,397.0	1,397.0	1,397.0	762.0	762.0	165.0	0.0	n/a
Agreed funding (US \$)	UNIDO	Project costs	7,514,867	8,732,614	8,000,000	9,243,486	9,600,000	14,788,765	11,400,000	11,300,000	9,550,000	9,600,000	11,971,763	111,701,495
		Support costs	526,041	611,283	560,000	647,044	672,000	1,035,214	798,000	791,000	668,500	672,000	838,023	7,819,105
	Germany	Project costs	-	267,386		365,514		211,235			250,000	-	-	1,085,135
		Support costs	-	31,877	-	42,502		25,183	-	-	29,804	-	-	129,365
Funds approved by ExCom (US \$)		Project costs	7,514,867	9,000,000										16,514,867
		Support costs	526,041	643,160										
Total funds requested for approval at this meeting (US \$)		Project costs				8,000,000*								8,000,000
		Support costs				560,000*								

*The third (2018) tranche was submitted to the 82nd meeting and deferred for consideration at the 83rd meeting (decision 82/71(b))

Secretariat's recommendation:	For individual consideration
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PROJECT DESCRIPTION

57. On behalf of the Government of China, UNIDO as the lead implementing agency, has resubmitted⁷ a request for funding for the third tranche of the extruded polystyrene (XPS) foam sector plan of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$8,000,000, plus agency support costs of US \$560,000 for UNIDO only.⁸ The submission includes a progress report on the implementation of the second tranche of the XPS foam sector plan, together with the tranche implementation plan for 2019 to 2020.

Progress report on the implementation of the second tranche of stage II

58. The contract between IECO and UNIDO for the implementation of the XPS foam sector plan (stage II) was signed in September 2017. A first group of 11 XPS foam enterprises has undergone verification of their baseline information (i.e., non-Article-5 ownership, baseline equipment, HCFC consumption and financial data). Ten of these enterprises were selected as beneficiaries and have already signed contracts with IECO for conversion to CO₂ with other low global-warming potential (low-GWP) co-blowing agents⁹ as alternative technology. The status of progress of the ten ongoing projects is presented in Table 1.

Table 1. Status of progress of XPS foam enterprises selected in the first and second tranches

Status of implementation	Number of enterprises	HCFC consumption in 2016	
		mt	ODP tonnes*
Equipment delivered and installed	1	655.07	36.03
Procurement contracts with suppliers signed	5	1,899.19	109.20
Signed contract with IECO (currently preparing procurement of equipment)	4	1,742.54	100.20
Total	10	4,296.80	245.43

* The ratio of HCFC-22 to HCFC-142b is 75 to 25 per cent (measured in mt).

59. Two projects will be completed in early 2020, and the remaining eight during the first half of 2020.

Technical assistance (TA) activities

60. TA activities implemented since the second half of 2017 include a workshop on alternative technologies in the XPS foam sector held in September 2017; technical support by the implementation support agency (ISA) to IECO and the enterprises with day-to-day operations and on-site baseline and performance verifications; public awareness activities to facilitate HCFC phase-out in the XPS foam sector; and a study tour of government departments, XPS foam producers and equipment suppliers in Germany and Switzerland to exchange information on alternative technologies in the European XPS foam market that could contribute to the implementation of stage II of the HPMP.

Level of fund disbursement

61. As of March 2019, of the US \$16,514,867 approved, US \$4,345,173 (26.3 per cent) had been disbursed by IECO to beneficiary enterprises. Table 2 presents the overall status of disbursements.

⁷ Initially submitted for consideration at the 82nd meeting, the Executive Committee decided to defer consideration to the 83rd meeting (decision 82/71(b)).

⁸ As per the letter of 25 February 2019 from the Ministry of Ecology and Environment of China to UNIDO.

⁹ Alcohol for XPS board thickness below 60 mm; CO₂ and small amounts of HFC-152a (GWP<200) for XPS board thickness above 60 mm.

Table 2. Status of disbursements for the XPS foam sector plan (as of March 2019)

XPS foam sector plan (UNIDO/Germany)		Tranche 1	Tranche 2	Total
Funds approved	UNIDO	7,514,867	8,732,614	16,247,481
	Germany	0	267,386	267,386
	Total (US \$)	7,514,867	9,000,000	16,514,867
Disbursements from implementing agencies to IECO	UNIDO	3,757,434	4,366,307	8,123,741
	Germany	0	0	0
	Total (US \$)	3,757,434	4,366,307	8,123,741
	Disbursement ratio	50.0%	48.5%	49.2%
Disbursements from IECO to beneficiaries	UNIDO	2,031,287	2,313,886	4,345,173
	Germany	0	0	0
	Total (US \$)	2,031,287	2,313,886	4,345,173
	Disbursement ratio	27.0%	25.7%	26.3%

Implementation plan for the third tranche of stage II

62. IECO will continue enforcing the quota permits for XPS foam enterprises consuming more than 100 metric tonnes (mt) of HCFCs per year. IECO will also continue with the conversion of the ten enterprises, and select between two and six additional enterprises for conversion, resulting in an additional reduction of at least 1,212 mt of HCFCs.

63. The following TA activities will be implemented: two technical workshops on HCFC phase-out strategy, policies, and alternative technologies; and ongoing public awareness activities to facilitate HCFC phase-out in the XPS foam sector, including regular meetings and information dissemination.

64. Table 3 presents the budget for the activities to be carried out during the implementation of the third tranche.

Table 3. Budget for the third tranche of the XPS foam sector plan in China

Activity	Budget (US \$)
Conversion of XPS foam enterprises to CO ₂ technology	7,287,752
TA activities	295,416
Project monitoring	416,832
Total third tranche	8,000,000

SECRETARIAT'S COMMENTS AND RECOMMENDATION**COMMENTS**HCFC consumption

65. Consumption of HCFCs in the XPS foam manufacturing sector in 2017 was 38,500 mt (2,213 ODP tonnes), which is lower than the 38,746 mt (2,286 ODP tonnes) allowable consumption in the Agreement between the Government of China and the Executive Committee, as shown in Table 4.

Table 4. Consumption of HCFCs in the XPS foam sector

XPS foam sector		2009	2010	2011	2012	2013	2014	2015	2016	2017
Consumption*	mt	41,000	45,100	43,905	44,200	41,164	39,200	30,100	35,500	38,500
	ODP tonnes	2,419	2,661	2,583	2,529	2,377	2,249	1,761	2,043	2,213

XPS foam sector		2009	2010	2011	2012	2013	2014	2015	2016	2017
Maximum allowable consumption**	mt	n/a	n/a	n/a	n/a	43,051	43,051	38,746	38,746	38,746
	ODP tonnes	n/a	n/a	n/a	n/a	2,540	2,540	2,286	2,286	2,286
Phase-out target	mt	n/a	n/a	n/a	n/a	5,726	n/a	4,305	n/a	n/a
	ODP tonnes	n/a	n/a	n/a	n/a	338	n/a	254	n/a	n/a

* As per the country programme implementation report.

** As per the Agreement signed at the 67th meeting for stage I up to 2015, and as per the Agreement signed at the 79th meeting for stage II for 2016 and 2017.

66. HCFC consumption in the sector grew in 2016 and 2017 due to the increased demand for XPS foam products for insulation. UNIDO and IECO continued to accelerate the completion of conversion projects under stage I, and the completion of new projects under stage II. IECO continued to apply the HCFC production quota and the domestic sales quota issued for each producer, as well as the HCFC consumption quotas for manufacturing enterprises using more than 100 mt.

67. Noting that the maximum allowable consumption in the Agreement for 2018 was 2,032 ODP tonnes, the Secretariat enquired whether the HCFC consumption data for 2018 was already available and whether the country was in compliance with the target. UNIDO explained that the data collection and verification of HCFC production, consumption, import and export was currently taking place and that the HCFC consumption figures would only become available in September 2019. Therefore, it was difficult for the Government to provide an estimate of the HCFC consumption at the time. The Secretariat notes that the current tranche request was originally scheduled in 2018, for which the consumption target of 2017 was accomplished. Achieving the 2018 consumption target would be a precondition to releasing the fourth tranche at the 84th meeting, as per the tranche allocation schedule.

Status of progress

68. The Secretariat noted the efforts by the Government of China and the implementing agencies to initiate the first ten conversions (245 ODP tonnes), as well as the plan to start two to six additional conversions under the third tranche (estimated at 70 ODP tonnes). The HCFC reductions generated by all of these projects together would amount to 315 ODP tonnes, to take place between 2019 and 2020, in view of the two-year duration of each conversion. Given that a reduction of 635 ODP tonnes is required by 2020 in line with the Agreement, the Secretariat enquired how those additional reductions would be achieved.

69. UNIDO explained that stage II of the XPS foam sector plan would eliminate a total of 2,286 ODP tonnes of HCFCs not only from the conversion of eligible enterprises, but also from the self-funded conversion of ineligible ones. This reduction will be supported by TA activities that will strengthen the industry's technical capacity and facilitate the adoption of low-GWP alternatives. Also, policy and regulatory interventions, including the HCFC production quota and domestic sales quota issued for each producer, as well as the HCFC consumption quotas for manufacturing enterprises using more than 100 mt, will ensure timely and sustained phase-out of HCFCs in the sector.

70. UNIDO also provided reassurance that IECO and UNIDO were identifying and engaging with more eligible enterprises to participate in conversion projects as soon as possible.

Project implementation and monitoring unit (PMU)

71. Noting that, in line with decision 81/46(b), implementing agencies will start using the financial reporting format for PMU expenditures agreed at the 81st meeting¹⁰ for 2019 tranches, the Secretariat requested the best estimate of PMU expenditures for the present meeting. The information is provided in

¹⁰ Annex X of document UNEP/OzL.Pro/ExCom/81/58.

Table 5. More information on PMU expenditures in all sector plans in China will be available once the 2019 tranche request is submitted.

Table 5. PMU expenditures, stage II of the XPS foam sector plan in China

Items	Description	Funding (US \$)
Project staff	Programme management staff	126,746
	Other supporting staff (financial, procurement, law support, others)	84,498
Agency operating expenses	Daily operating expenses (domestic travel, meetings, office facilities and equipment, others)	106,610
Consulting services	Consulting institutions and experts hired for project evaluation, financial and technical verification, technical review, bidding evaluation, technical support. Contractual staff to help with high workload or special events, such as meetings, workshops, and translation-related cost.	105,425
Total disbursed PMU expenditures under tranche 1 and tranche 2		423,279

Interest

72. Information on the interest accrued on the funding approved for the sector plans of the HPMP for China is provided at every last meeting of the year following the commissioning of a financial audit. Accordingly, information on the interest accrued in 2018 will be submitted to the 84th meeting.

Sustainability of the HCFC phase-out

73. In explaining how the policy framework and enforcement will be strengthened to ensure sustained phase-out of HCFC in the XPS foam sector, UNIDO indicated that the Government of China would promulgate the ban on the use of HCFCs as blowing agent before the complete phase-out of HCFCs. Additionally, in line with decision 82/65, the Government of China has submitted to the present meeting the review of current monitoring, reporting, verification and enforcement systems under the HCFC consumption and production phase-out management plans (HPMP and HPPMP),¹¹ including the action plan to strengthen legislation and its implementation.

Conclusion

74. The Secretariat notes that China continues to be in compliance with the Montreal Protocol and its Agreement with the Executive Committee with regard to the XPS foam sector plan. There is significant progress in the implementation of the first two tranches of stage II, including the initiation of ten conversion projects and several TA activities. The level of disbursement to beneficiary enterprises is above 20 per cent of the funds approved in the second tranche. Given the imminent HCFC reductions in the Agreement by 2020, the funding from the third tranche is required to continue implementing investment projects, TA activities and policy and regulatory measures, to ensure that HCFC consumption in the sector is reduced and maintained below the maximum allowable consumption in the Agreement.

RECOMMENDATION

75. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the second tranche of the extruded polystyrene (XPS) foam sector plan of stage II of the HCFC phase-out management plan (HPMP) for China; and

¹¹ UNEP/OzL.Pro/ExCom/83/11/Add.1.

- (b) Approving the third tranche of the XPS foam sector plan of stage II of the HPMP for China, and the corresponding 2019-2020 tranche implementation plan, at the amount of US \$8,000,000, plus agency support costs of US \$560,000 for UNIDO.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) industrial and commercial refrigeration and air-conditioning	UNDP	77 th	33% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	14,604.66 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2017	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22		1,595.00		5,807.50	2,831.55				9,514.05
HCFC-123				12.88	6.95				19.83
HCFC-124					-0.13				-0.13
HCFC-141b		4,008.26				396.00			4,404.26
HCFC-142b		617.50		5.85	43.06				666.41
HCFC-225ca						0.96			0.96

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	19,269.0	Starting point for sustained aggregate reductions:	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	12,161.02	Remaining:	6,704.42

(V) BUSINESS PLAN		2019	2020	2021	After 2021	Total
UNDP	ODS phase-out (ODP tonnes)	64.68	86.24	86.24	63.47	300.63
	Funding (US \$)	12,840,000	17,120,000	17,120,000	12,600,364	59,680,364

(VI) PROJECT DATA			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits			17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)			2,162.5	2,162.5	2,042.4	2,042.4	1,609.9	1,609.9	*	*	*	*	*	n/a
Agreed funding (US \$)	UNDP	Project costs	13,368,756	20,000,000	12,000,000	16,000,000	16,000,000	11,776,041	-	-	-	-	-	89,144,797
		Support costs	935,813	1,400,000	840,000	1,120,000	1,120,000	824,323	-	-	-	-	-	6,240,136
Funds approved by ExCom (US \$)		Project costs	13,368,756	20,000,000										33,368,756
		Support costs	935,813	1,400,000										
Total funds requested for approval at this meeting (US \$)		Project costs				12,000,000**								12,000,000
		Support costs				840,000								

* Maximum allowable total consumption of Annex C, Group I substances in the ICR sector for the period 2021 to 2026 will be determined later, but would in no case be greater than 1,609.9 ODP tonnes prior to 2025, and no greater than 781 ODP tonnes thereafter.

** The third (2018) tranche was submitted to the 82nd meeting and deferred for consideration at the 83rd meeting (decision 82/71(b)).

Secretariat's recommendation:	For individual consideration
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PROJECT DESCRIPTION

76. On behalf of the Government of China, UNDP, as the designated implementing agency, has re-submitted¹² a request for funding for the third tranche of the industrial and commercial refrigeration and air-conditioning (ICR) sector plan of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$12,000,000, plus agency support costs of US \$840,000¹³. The submission includes the progress report on the implementation of the second tranche and the tranche implementation plan for 2019.

Progress report on the implementation of the second tranche

Enterprise-level activities

77. Contracts were signed with 12 enterprises for the conversion of 18 manufacturing lines to phase out 2,558.18 metric tonnes (mt) of HCFC-22 after verification of the baseline consumption and capacity of these lines. The implementation of the conversion projects is progressing and is being closely monitored according to the defined milestones.¹⁴ Ten lines have completed prototyping, conversion and performance test; one line has completed the design and procurement contract; six lines have completed the design; and one line has just signed the conversion contract and is in the process of design. Table 1 shows the progress in the conversion of manufacturing lines so far achieved.

Table 1. Progress in the conversion of manufacturing lines under tranches I, II and III

No.	Name of enterprise	Phase-out of HCFC-22 (mt)	No. of lines	Type of products	Alternative technology	Funding (US \$)	Milestones achieved
1-1	Yantai Moon	590.23	1	Water chiller (heat pump)	R-290	9,319,613	Completion of prototype manufacture, conversion of lines and performance test
1-2	Dunham-Bush	20.42	1	Heat pump water heater	R-32	282,762	Completion of prototype manufacture, conversion of lines and performance test
1-3	Nanjing TICA	91.58	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	968,400	Completion of prototype manufacture, conversion of lines and performance test
1-4	Nanjing TICA	32.52	1	Heat pump water heater	CO ₂	547,038	Completion of prototype manufacture, conversion of lines and performance test
1-5	TCL ZhongShan	115.31	1	Unitary air-conditioning	R-32	1,020,456	Completion of design and procurement contracts
1-6	Guangdong Jirong	21.13	1	Unitary air-conditioning	R-32	292,769	Completion of prototype manufacture, conversion of lines and performance test
Total tranche I		871.19	6			12,431,038	
2-1	Yantai Aowei	108.07	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	1,561,153	Completion of prototype manufacture, conversion of lines and performance test

¹² Initially submitted for consideration at the 82nd meeting, the Executive Committee decided to defer consideration to the 83rd meeting (decision 82/71(b)).

¹³ As per the letter of 27 February 2019 from the International Environmental Cooperation Center (IECO) of the Ministry of Ecology and Environment of China to UNDP.

¹⁴ The milestones include: signing the conversion contract (30 per cent payment); completion of design and procurement contract (20 per cent payment); completion of prototype manufacture, conversion of lines and performance test (30 per cent payment); and trial production, training, and equipment disposal upon project acceptance (20 per cent payment).

No.	Name of enterprise	Phase-out of HCFC-22 (mt)	No. of lines	Type of products	Alternative technology	Funding (US \$)	Milestones achieved
2-2	Yantai Aowei	75.28	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	1,168,935	Completion of prototype manufacture, conversion of lines and performance test
2-3	Zhejiang Guoxiang	42.18	1	Unitary air-conditioning	R-32	504,288	Completion of prototype manufacture, conversion of lines and performance test
2-4	Haixin Shandong	85.26	1	Unitary air-conditioning	R-32	819,134	Completion of prototype manufacture, conversion of lines and performance test
2-5	Haixin Shandong	105.31	1	Unitary air-conditioning	R-32	953,449	Completion of prototype manufacture, conversion of lines and performance test
2-6	Qingdao Haier	492.00	1	Unitary air-conditioning	R-32	3,265,986	Completion of design
2-7	Dunham-Bush	112.20	1	Water chiller (heat pump)	R-513A	1,610,512	Completion of design
2-8	Dunan Environment	147.34	1	Water chiller (heat pump)	R-513A	2,030,774	Completion of design
2-9	Zhejiang Guoxiang	95.22	1	Water chiller (heat pump)	R-513A	1,407,457	Completion of design
2-10	Dalian Refrigeration	237.04	1	Water chiller (heat pump)	R-290	3,373,561	Completion of design
2-11	Shandong Shenzhou	114.09	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	1,633,116	Completion of design
Total tranche II		1,613.99	11			18,328,365	
3-1	Dalian Refrigeration	73.00	1	Water chiller (heat pump)	R-290	1,231,414	Signed the conversion contract

78. Twelve enterprises submitted letters of intent to convert 16 manufacturing lines, of which 11 are small and medium-sized enterprises (SMEs) that manufacture freezers and refrigeration condensing units. Based on the preliminary data, the total consumption to be addressed through the conversion of 16 manufacturing lines amounts to 1,067 mt of HCFC-22 at a total estimated cost of US \$16,770,034. Verification of actual consumption and manufacturing capacity has been conducted for six manufacturing lines. One contract has been signed to convert one manufacturing line to R-290 to phase out 73 mt of HCFC-22 at a total cost of US \$1,231,414. Another five lines are under evaluation. IECO will continue to verify other lines for conversion contracts. Implementation of these conversion contracts is planned for the third and fourth tranches.

Technical assistance (TA) activities

79. The following TA and awareness-raising activities were also implemented:

- (a) A contract has been signed with the China Refrigeration and Air-conditioning Industrial Association (CRAA) to assist in the smooth implementation of phase-out activities, including providing assistance with project application and verification; monitoring progress of conversion and overall phase-out in the sector; coordinating workshops, seminars and awareness-raising activities; tracking alternative technology development, assessing emerging alternatives in the ICR sector and providing advice to enterprises on technology selection; and collecting data and monitoring sector consumption. After signing the contract, CRAA has assisted IECO in identifying 33 manufacturing lines in 23 enterprises for conversion, verifying baseline consumption, and monitoring the progress of conversion projects;

- (b) Two contracts were also signed with Daxin Certified Public Accountant (DCPA) to conduct verification of the baseline consumption and eligibility of the manufacturing lines to be converted, and verification of performance milestones during the conversion process. Since the signature of the contracts, DCPA has verified the consumption of 23 manufacturing lines and the project implementation milestones of 17 manufacturing lines;
- (c) A research project was initiated to develop a methodology for evaluating the performance and energy consumption of the CO₂ refrigeration system in supermarkets. The TA is intended to compare refrigeration systems using CO₂ and other refrigerants including HCFC-22, and to collect and analyse the data on system performance and energy consumption. As of February 2019, performance tests and energy consumption for refrigeration systems using CO₂, HCFC-22 and R-404A had been completed;
- (d) A study on energy conservation in small and medium-sized cold-storage and compression-condensing units was launched to develop a methodology for the evaluation of the energy efficiency of cold-storage equipment (20-70 tonnes of refrigeration capacity). The activity will assist in the establishment of an energy-efficiency standard for refrigeration equipment, eliminating the obsolete technologies and removing barriers for the transition to energy-efficient and environment-friendly technologies. The project is progressing. As of February 2019, the research on the evaluation methods of energy-saving and emission reduction impacts of small and medium-sized cold storage and compression condensing unit had been completed;
- (e) A study on the safety requirements and evaluation methodology for using flammable refrigerants in industrial refrigeration and air-conditioning equipment has been started. The TA intends to collect data and analyse the information for implementing a safety certification system in order to reduce the safety risks linked to the manufacturing and use of such products. The study covers both product safety and manufacturing-process safety. The manufacturing-process safety certification is to ensure that the manufacturing facilities (including the testing equipment) meet the safety requirements for using flammable refrigerants. The current certification system in China does not include products using flammable refrigerants. As of February 2019, the project team had conducted literature review and case studies domestically and abroad, and had analysed the safety measures and solutions for each stage of the use of flammable refrigerants including process design, manufacturing, transportation, testing and installation of equipment. The relevant safety requirements for flammable refrigerants in national standard GB/T 9237-2017 were analysed and the relevant restrictions and requirements at each stage were clarified. It is planned to carry out on-site research at enterprises' production sites, conduct targeted research on existing problems at the enterprise sites and propose solutions. These activities will support further work in formulating safety requirements and verification methods;
- (f) One training session was conducted for ten SMEs on project preparation. The training covered stage II HPMP implementation; requirements and procedures when implementing manufacturing-line conversion projects; preparation of project proposals and key aspects during implementation; verification of capacity and baseline consumption of manufacturing lines; verification of progress performance milestones; as well as project financial management. After the training session, nine enterprises consuming less than 50 mt submitted letters of intent to convert their manufacturing lines;

- (g) An international exhibition for ICR equipment and a 2018 industrial roundtable and ozone-to-climate roadshow were held in April 2018. Experts from different countries made presentations reviewing policies and alternative technologies. A special pavilion was set up to showcase ozone and climate friendly technologies, including CO₂, NH₃, hydrocarbons, HFOs and R-32, and to highlight the progress of refrigerant replacement. A series of technical workshops were organized covering the themes of ICR equipment, cold chain and refrigerants. Manufacturers demonstrated the progress in adapting alternative technologies and shared their experience from the demonstration projects. More than 80 ozone officers attended the round table meeting and visited the exhibition, and more than 10,000 people visited the special pavilion for ozone and climate friendly technologies; and
- (h) An international workshop on CO₂ heat pumps was held in July 2018 with the support of UNDP, UNEP, CRAA, the Chinese Association of Refrigeration and the Hefei General Machinery Research Institute. Experts made presentations on policies, development trends and prospects related to CO₂ heat pump technologies. Information on advanced CO₂ heat pump technologies was disseminated, and participants shared experiences in using this refrigerant in the ICR sector. The importance of the CO₂ technology in environmental protection was emphasized. More than 200 participants from international organizations, government officials, industrial associations and enterprises, universities and research institutions attended the workshop.

Project implementation and monitoring unit (PMU)

80. IECO is responsible for the overall implementation of the ICR sector plan. After approval of the second tranche, IECO identified new enterprises and manufacturing lines for conversion, organized training workshops and sessions to disseminate policies and procedures for projects, undertook verification missions, and signed contracts with enterprises. IECO also developed terms of reference for five TA projects and signed contracts for the TA activities. CRAA assisted IECO to implement the sector plan and monitor the progress of implementation.

Level of fund disbursement

81. As of February 2019, of the US \$33,368,756 approved so far, US \$29,188,271 had been disbursed from UNDP to IECO, and US \$16,344,970 had been disbursed to final beneficiary enterprises and for TA activities, accounting for 48.98 per cent of the total funding approved. The disbursement of US \$7,753,197 from the second tranche accounts for 38.77 per cent of the funding for the second tranche, as shown in Table 2.

Table 2. Status of disbursement of stage II of the ICR sector plan as of February 2019 (US \$)*

ICR sector plan		Tranche I (2016)	Tranche II (2017)	Total
Funds approved by the Executive Committee		13,368,756	20,000,000	33,368,756
Disbursement from UNDP to IECO	Amount (US \$)	13,368,756	15,819,515	29,188,271
	Disbursement ratio (%)	100	79.10	87.47
Disbursement from IECO to beneficiaries	Amount (US \$)	8,591,773	7,753,197**	16,344,970
	Disbursement ratio (%)	64.27	38.77	48.98
Enterprise conversions		7,466,210	6,612,206	14,078,416
TA		428,998	307,328	736,326
PMU		696,565	833,663	1,530,228
Total		8,591,773	7,753,197	16,344,970

*The interest of US \$103,708 for 2015, US \$97,468 for 2016, and US \$7,299 for 2017 held by China have been deducted from the funding tranches approved for 2016 and 2017 respectively.

** Includes the funds disbursed to Dalian Refrigeration for the conversion of one manufacturing line to be charged to the third tranche.

Implementation plan for the third tranche

82. During the third tranche, it is planned to phase out 750 mt of HCFC-22 at a total cost of US \$9,000,000 through enterprise conversion. The enterprises to be converted with the funding from the third tranche will be selected from the 16 manufacturing lines that have been initially identified in Table 3; the remaining lines identified will be converted with the funding from the fourth tranche. The eligibility and baseline consumption of these lines will be verified; the conversion process will be closely monitored; and milestones achieved during conversion will be verified by an independent consultant firm.

Table 3. Manufacturing lines identified for conversion in the ICR sector plan

No.	Name of enterprise	Phase-out of HCFC-22 (mt)	No. of lines	Type of products	Alternative technology	Funding (US \$)
3-1	Dalian Refrigeration*	73.00	1	Water chiller (heat pump)	R-290	1,231,414
3-2	Tianjin Fashihao	49.00	1	Freezers, refrigeration and condensing units	NH ₃	791,900
3-3	Jinan Oufeite	188.00	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	2,517,080
3-4	Jinan Oufeite	117.00	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	1,667,920
3-5	Jinan Dasen	176.00	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	2,373,560
3-6	Jinan Dasen	37.00	1	Freezers, refrigeration and condensing units	NH ₃ /CO ₂	672,380
3-7	Yantai Ousenna	70.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	1,105,800
3-8	Liaoning Gaoxiang	47.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	821,780
3-9	Liaoning Gaoxiang	38.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	687,320
3-10	Shenyang Anjie	45.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	791,900
3-11	Shanghai Jiadun	35.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	642,500
3-12	Yantai Wanxin	44.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	776,960
3-13	Hunan Nanfang	46.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	806,840
3-14	Hunan Nanfang	23.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	463,220
3-15	Quanzhou Zhiyun	49.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	851,660
3-16	Shenyang Gulun	30.00	1	Freezers, refrigeration and condensing units	HFC-134a/CO ₂	567,800
	Total	1,067.00	16	-	-	16,770,034

*Contract has been signed and 30 per cent of funds have been disbursed.

83. The ongoing TA activities started in the first and second tranches will continue to be implemented during the third tranche. In addition, the following TA activities have been identified for implementation during the third tranche (the costs of the planned TA activities will be determined through bidding). Additional activities may be identified and implemented as required.

- (a) A review of the latest research on HFO refrigerants and its application to various types of water chiller (heat pump), and an analysis of the characteristics of HFO refrigerants, system cycles, components and optimization of energy use. A prototype of a water chiller (heat pump) will be constructed to conduct experiments and analysis. The final report will

provide guidance on the selection of HFOs as an alternative in the phase-out of HCFCs in chillers;

- (b) Research and an expert review on safety requirements for the CO₂ refrigeration systems, verifying technical data and formulating draft Safety Regulations for CO₂ refrigeration systems. The outcomes will include safety requirements for equipment and accessories, system design, construction and other conditions. The safety regulations will lay a foundation for the widespread use of CO₂ refrigeration systems in China;
- (c) A review of the scope and classification of low-ambient-temperature-air-source heat-pump products, to include additional provisions for alternative technologies, a study of performance testing methods, and changes in safety requirements when using alternative technologies. Based on the review and study, standards will be revised for water chiller (heat pump) packages under the vapor compression cycle for industrial, commercial and similar applications (GB/T 18430.1-2007); and low ambient temperature air source heat pump (water chilling) packages for industrial, commercial and similar application (GB/T 25127.1-2010 and GB/T 25127.2-2010);
- (d) A demonstration of HC-290 chillers to promote their use in the dairy products and meat processing industry. This activity includes manufacturing a prototype chiller unit and installing it at a demonstration site; collecting data and monitoring its operation; analysing the data and developing a report; and disseminating the outcomes of the demonstration; and
- (e) Technical workshops and awareness-raising activities among key stakeholders to address the safety concerns of end-users regarding the flammability of HFC-32 units produced on the converted lines in order to increase market acceptance of HFC-32 technologies in the ICR sector.

84. IECO will coordinate, monitor and report on the progress of implementation. The proposed budget for the third tranche is presented in Table 4.

Table 4. Proposed budget for the implementation plan of the third tranche

Activities	Funding (US \$)
Conversion of manufacturing lines	9,000,000
TA activities	
Studies and research activities on alternatives, certification and barrier removal	800,000
Establish new standards and revise existing standards	400,000
Technical consultant services and verification	250,000
Demonstration of products with alternative technologies	700,000
Technical communication and seminars including travel costs	50,000
Public awareness and training workshops	45,004
Sub-total for TA activities	2,245,004
PMU	754,996
Total	12,000,000

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

85. Consumption of HCFCs in the ICR sector in 2017 was 38,234 mt (2,081 ODP tonnes), which is lower than the 39,320 mt (2,163 ODP tonnes) allowable consumption in the Agreement between the Government of China and the Executive Committee, as shown in Table 5.

Table 5. Consumption of HCFCs in the ICR sector

	2012	2013	2014	2015	2016	2017
Maximum allowable consumption (ODP tonnes)	n/a	2,403	2,403	2,163	2,163	2,163#
Maximum allowable consumption (mt)	n/a	43,925	43,925	39,320	39,320	39,320#
Actual consumption in ICR sector (ODP tonnes)*	2,610.47	2,225	2,219	1,982	2,082	2,081#
Actual consumption in ICR sector (mt)*	47,463.00	40,805	40,749	36,385	38,255	38,234#
Reduction target set in HPMP (ODP tonnes)**	n/a	225	0	240	0	0#
Reduction target set in HPMP (mt)**	n/a	4,080	0	4,370	0	0#

*As per the ICR implementation report.

**As per the Agreement signed at the 67th meeting for stage I up to 2015, and as per the Agreement signed at the 79th meeting for stage II for 2016 and 2017.

86. The 2017 HCFC consumption in the ICR sector remains similar to that in 2016. UNDP and IECO continued to promote the sales and market adoption of the alternative technologies and products manufactured by the converted lines in stage I and to implement the conversion projects in stage II to reduce HCFC consumption. IECO continued to apply the HCFC production quota and the domestic sales quota issued for each producer, as well as the HCFC consumption quotas for manufacturing enterprises using more than 100 mt.

87. Noting that the maximum allowable consumption in the Agreement for 2018 was 2,042.4 ODP tonnes, the Secretariat enquired whether the HCFC consumption data for 2018 was already available and whether the country was in compliance with the target. UNDP explained that the data collection and verification of HCFC production, consumption, import and export was currently taking place and that the HCFC consumption figures would only become available in September 2019. Therefore, it was difficult for the Government to provide an estimate of the HCFC consumption at the time.

88. The Secretariat notes that the current tranche request was originally scheduled in 2018, for which the consumption target of 2017 was accomplished. Achieving the 2018 consumption target would be a precondition to releasing the fourth tranche at the 84th meeting, as per the tranche allocation schedule.

Alternative technologies used in conversion projects

89. The proposed third tranche includes a request for replacing the CO₂/NH₃ technology originally approved in the HPMP with CO₂/HFC-134a technology in ten manufacturing lines of freezers and refrigeration equipment for cold storage and food processing, mostly in small enterprises consuming less than 50 mt. UNDP explained that, due to several explosions involving ammonia in recent years, the Government has enacted strict laws and regulations on the use of ammonia, including a cold storage safety code (GB28009/2011); a cold storage design code (GB50072/2010); and an ammonia refrigeration system installation engineering construction and acceptance code (SBJ12/2011). Accordingly, all enterprises using ammonia have to rectify their safety systems and assess their risk management in terms of controlling the sources of chemicals, the refrigeration system, the certification of operators, and emergency management.

90. Due to the limited technical capacity of 10 SMEs and the complexity and challenges in managing the toxicity of ammonia, they find it difficult to meet the requirements set forth in the national laws and regulations, even with the TA provided through the HPMP implementation and the 25 per cent additional funding. Based on these constraints, SMEs are unable to take the safety risks and choose to use CO₂/HFC-134a cascade technology instead of ammonia.

91. Upon request for clarification, UNDP confirmed that the costs related to the conversion to HFC-134a by these enterprises will not be funded by the Multilateral Fund.

92. The Secretariat noted that the lack of viable low-global warming potential (GWP) technologies for SMEs has made the phase-out of HCFCs in the ICR sector challenging. As reported by UNDP, the replacement of one mt of HCFC-22 will phase in 0.85 mt of CO₂ and 0.15 mt of HFC-134a. The proposed conversion of 10 lines would phase out 427 mt of HCFC-22 and phase in approximately 64 mt of HFC-134a, resulting in a net greenhouse gas (GHG) emission reduction of 680,916 tCO₂eq from refrigerant replacement (88 per cent of GHG emission reduction from the baseline). The energy efficiency of the CO₂/HFC-134a technology is 5 to 10 per cent higher than that of the HCFC-22 system, which will imply additional GHG emission reduction. Based on the above, the Executive Committee may wish to consider the request for replacing CO₂/NH₃ technology with CO₂/HFC-134a technology submitted by UNDP on behalf of the Government of China.

Reporting of expenditures of the PMU

93. Upon a request for a detailed report on the expenditures of the PMU in line with decision 81/46(b), UNDP provided an estimated breakdown as shown in Table 6.

Table 6. PMU breakdown of expenditures as of 18 March 2019 (US \$)

Items	Description	2016 tranche	2017 tranche	Total
Project staff	Programme management staff	208,578	249,631	458,209
	Other supporting staff, including financial, procurement, legal support	139,053	166,422	305,475
Agency operating	Daily operating expenses, including domestic travel, meeting, office facilities and equipment	175,442	209,972	385,414
Consulting Services	Consulting institutions and experts hired for project evaluation, financial and technical verification, technical review, bidding evaluation, technical support, etc. Also include contractual staff to help with high workload or special events, such as meetings, workshops, and translation-related costs.	173,492	207,638	381,130
Total PMU		696,565	833,663	1,530,228

Interest

94. Information on the interest accrued on the funding approved for the sector plans of the HPMP for China has been provided at every last meeting of the year following the commissioning of a financial audit. Accordingly, information on the interest accrued in 2018 will be submitted to the 84th meeting.

Sustainability of the HCFC phase-out

95. In explaining how the policy framework and enforcement will be strengthened to ensure sustained phase-out of HCFC in the ICR sector, UNDP indicated that in line with decision 82/65, the Government of China has submitted to the present meeting the review of current monitoring, reporting, verification and enforcement systems under the HCFC consumption and production phase-out management plans (HPMP and HPPMP),¹⁵ including the action plan to strengthen legislation and its implementation.

Conclusion

96. The Secretariat notes that implementation of the second tranche of the ICR sector plan has progressed well. Eighteen conversion contracts have been signed to phase out 2,558.18 mt of HCFC-22. Of this amount, 66 per cent of the consumption will be converted to low-/zero-GWP technologies other than HFC-32. The conversion of manufacturing capacity is progressing. Out of the 18 lines that have signed the conversion contract, ten lines have completed prototype manufacture, line conversion and performance tests and are in the process of trial production; other lines are in the process of product design and equipment procurement. The SMEs that have opted CO₂/HFC-134a technologies will not seek funding from the Multilateral Fund for future phase-out of HFC-134a phased in through these conversion projects. Several TA activities have been implemented, including technology studies, the development of technical guidelines for meeting safety regulations, and the revision of standards to assist in the conversion of manufacturing capacity and support market adoption of the alternative technologies. In view of the progress made and the overall funding disbursement of 49 per cent, the Secretariat recommends approval of the third tranche.

RECOMMENDATION

97. The Executive Committee may wish to consider:

- (a) Noting the 2018 progress report on the implementation of the second tranche of the industrial and commercial refrigeration and air-conditioning (ICR) sector plan of stage II of the HCFC phase-out management plan (HPMP) for China;
- (b) Approving the third tranche of the ICR sector plan of stage II of the HPMP for China, and the corresponding 2019 tranche implementation plan, in the amount of US \$12,000,000, plus agency support costs of US \$840,000 for UNDP, on the understanding that:
 - (i) Consistent with decision XXVIII/2, those manufacturing lines that are converted to CO₂/HFC-134a technology under the third tranche would not be eligible for further funding under the Multilateral Fund; and
 - (ii) The level of funding provided to those manufacturing lines would not constitute a precedent for any such future conversions.

¹⁵ UNEP/OzL.Pro/ExCom/83/11/Add.1.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

CHINA

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) refrigeration servicing and enabling programme	UNEP (lead), Germany and Japan	76 th	n/a

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	14,604.66 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2017	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22		1,595.00		5,087.50	2,831.55				9,514.05
HCFC-123				12.88	6.95				19.83
HCFC-124					-0.13				-0.13
HCFC-141b		4,008.26				396.00			4,404.26
HCFC-142b		617.50		5.85	43.06				666.41
HCFC-225ca						0.96			0.96

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	19,269.0	Starting point for sustained aggregate reductions:	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	12,161.02	Remaining:	6,704.42

(V) BUSINESS PLAN		2019	2020	2021	Total
Japan	ODS phase-out (ODP tonnes)	2.89	2.89	2.89	8.67
	Funding (US \$)	90,400	90,400	90,400	271,200
UNEP	ODS phase-out (ODP tonnes)	118.29	121.91	129.15	369.35
	Funding (US \$)	3,631,431	3,742,484	3,964,590	11,338,505
Germany	ODS phase-out (ODP tonnes)	10.85	7.24	0.00	18.09
	Funding (US \$)	336,000	224,000	0	560,000

(VI) PROJECT DATA			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total	
Montreal Protocol consumption limits			17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a	
Maximum allowable consumption (ODP tonnes)			16,978.9	16,978.9	15,048.1	15,048.1	11,772.0	*	*	*	*	*	*	n/a	
Agreed funding (US \$)	UNEP	Project costs	3,299,132	2,570,000	3,270,000	3,370,000	3,570,000	2,810,868	-	-	-	-	-	18,890,000	
		Support costs	364,651	284,061	361,431	372,484	394,590	310,684	-	-	-	-	-	-	2,087,900
	Germany	Project costs	300,000	-	300,000	200,000	-	200,000	-	-	-	-	-	-	1,000,000
		Support costs	36,000	-	36,000	24,000	-	24,000	-	-	-	-	-	-	120,000
	Japan	Project costs	80,000	80,000	80,000	80,000	80,000	-	-	-	-	-	-	-	400,000
		Support costs	10,400	10,400	10,400	10,400	10,400	-	-	-	-	-	-	-	52,000
Funds approved by ExCom (US \$)		Project costs	3,679,132		2,650,000									6,329,132	
		Support costs	411,051		294,461										705,512
Total funds requested for approval at this meeting (US \$)		Project costs				3,850,000**								3,650,000	
		Support costs				431,831									407,831

* Maximum allowable total consumption of Annex C, Group I substances for the period 2021 to 2026 would be determined at a later date, but would in no case be greater than 11,772 ODP tonnes prior to 2025, and no greater than 6,131 ODP tonnes thereafter.

** The third (2018) tranche was submitted at the 82nd meeting and deferred for consideration at the 83rd meeting (decision 82/71(b)). The funds requested also include the 2019 tranche (US \$200,000) for Germany.

Secretariat's recommendation:	For individual consideration
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PROJECT DESCRIPTION

98. On behalf of the Government of China, UNEP as the lead implementing agency, has resubmitted¹⁶ a request for funding for the third tranche of the refrigeration servicing sector and enabling components of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$4,281,831, consisting of US \$3,270,000, plus agency support costs of US \$361,431 for UNEP, US \$500,000, plus agency support costs of US \$60,000 for Germany¹⁷ and US \$80,000, plus agency support costs of US \$10,400 for Japan.¹⁸ The submission included a progress report on the implementation of the second tranche and the tranche implementation plan for 2019 to 2020.

Progress report on the implementation of the second tranche of stage II

99. The following activities were implemented:

- (a) The project cooperation agreement (PCA) for the second tranche between UNEP and International Environmental Cooperation Center (IECO) was signed in September 2018, and funds were subsequently transferred in October 2018;
- (b) Agreement with Customs was reached on the selection of the districts for law enforcement capacity building activities, and possible type of activities was adjusted;
- (c) Agreements with three pilot cities (Guangzhou, Shenzhen and Tianjin) with agreed work plans were finalised; a capacity building workshop on enforcing ODS regulations for 45 participants from local Ecology and Environment Bureaus (EEBs) was conducted; a training workshop for local capacity building on ODS policies and regulations, China's domestic and international compliance situation, issues related to increased emissions of CFC-11, and the status of the implementation of the HPMP was conducted in January 2019 for 150 participants from 31 EEBs;
- (d) Agreement and work plan for the national executing agency for the delivery of the technician training programme was finalised; criteria for selection of new training centres was completed; proposals submitted by 23 training centres were reviewed; contract signature process for the additional 15 training centres was initiated. As of February 2019, IECO had signed contracts with seven of these training centres;
- (e) The terms of reference (TOR) for developing the codes for the servicing and maintenance of air-conditioning units and water chillers were finalised and the procurement process and contracts were initiated; the TOR for the adjustments in the standards for the installation of room air-conditioners were revised, and the development of the codes of good practices for installation and servicing of air-conditioners was finalised. Signing of contracts with the relevant institute for the development of these two codes is expected within the first half of 2019;

¹⁶ Initially submitted for consideration at the 82nd meeting, the Executive Committee decided to defer consideration to the 83rd meeting (decision 82/71(b)).

¹⁷ Comprises the 2018 and 2019 tranches, amounting to US \$300,000 plus agency support costs of US \$36,000, and US \$200,000, plus agency support costs of US \$24,000, respectively.

¹⁸ As per the letter of 28 February 2019, from the International Environmental Cooperation Center, Ministry of Ecology and Environment of China, to UNEP.

- (f) Implementation agreement for the Government of Germany’s component of the first tranche was signed; one beneficiary (Chaoshifa supermarket chain) for the demonstration of a CO₂-transcritical system application was identified; six trainers from vocational training centres and six managers/engineers from the sub-sector participated in an overseas training workshop/study tour on the application of flammable refrigerants (e.g. R-290, NH₃, and CO₂) in the cold chain and supermarket sub-sector; and a national training workshop on alternatives to HCFC-22 in the supermarket sector was organised and outreach activities for the refrigeration servicing sector were conducted;
- (g) The TOR and selection criteria for the delivery of the technicians’ training programme through manufacturers’ servicing workshops were finalised; and a workshop was conducted with eight room air-conditioner manufacturers to discuss details of the training plan for implementation through their training system;
- (h) Survey on HCFC recovery was conducted; and the survey report for the barrier analysis and market mechanism study on HCFC recovery was reviewed and revised for final publication; and
- (i) Awareness raising activities continued including the upgrade of the website “OzonAction in China,” and publicity materials were produced. The Ozone2Climate Alternative Roadshow and Roundtable, and International Ozone Day 2018 celebration were organised.

Project implementation and monitoring unit (PMU)

100. The responsibilities for direct coordination, implementation and monitoring of the activities of the servicing sector plan of the HPMP, as well as capacity building of national and local authorities, and the awareness and outreach strategy is with the Working Group for the refrigeration servicing sector plan which acts as the PMU for this sector. UNEP had provided a financial report for PMU disbursement in China in line with decision 81/46(b), as shown in Table 1.

Table 1. PMU expenditures for 2016 - 2017, stage II of the refrigeration servicing and enabling programme in China

Items	Description	Funding (US \$)
Project staff	Programme management staff	70,500
	Staff handling financial, procurement, and providing legal matter support.	47,000
Operational cost	Daily operating expenses, including domestic travel, meeting, office facilities and equipment	58,750
Consulting services	Consulting institutions and experts hired for project proposal evaluation, financial and technical verification/inspection, technical review, bidding proposal evaluation, and other technical support	58,750
Total disbursements (first and second tranches)		235,000

Level of fund disbursement

101. As of February 2019, of the US \$6,329,132 approved so far, US \$3,062,660 had been disbursed (US \$2,760,000 for UNEP, US \$142,660 for Germany and US \$160,000 for Japan) as shown in Table 2. The balance of US \$3,266,472 will be disbursed in 2019-2020.

Table 2. Financial report of refrigeration servicing and enabling programme for China (US \$)

Agency	First tranche		Second tranche		Total approved	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
UNEP	3,299,132	1,540,000	2,570,000	1,300,000	5,869,132	2,840,000
Germany	300,000	142,660	0	0	300,000	142,660
Japan	80,000	0	80,000	0	160,000	0
Total	3,679,132	1,682,660	2,650,000	1,300,000	6,329,132	2,982,660
Disbursement rate (%)	45.7		49.1		47.1	

Implementation plan for the third tranche

102. The following activities will be implemented between January 2019 and December 2020:

- (a) One training workshop each for local commercial officers, ODS dealers and local Customs officers to strengthen import/export management and identify four districts to further conduct capacity-building activities on ODS import/export control (UNEP) (US \$205,000);
- (b) Capacity building of local EEBs through two training workshops on ODS phase-out management at provincial and city levels to exchange experiences on best practices for enforcement of ODS regulations; providing technical and policy assistance to local EEBs on management and supervision activities related to the HPMP implementation, and compiling a book on China's regulations and policies on ODS management (UNEP) (US \$375,000);
- (c) Signing contracts with cities (Guangzhou, Shenzhen and Tianjin) for the implementation of the pilot city project following internal procurement procedures (funds from previous tranche);
- (d) Signing contracts with 17 training centres to implement the technicians training programmes, including training coordination and monitoring by China Association of Staff and Workers Education and Vocational Training (CASWEVT) (UNEP/Japan) (US \$1,820,000);
- (e) Training of 3,000 technicians through manufacturers' servicing workshops (UNEP/Japan) (US \$340,000);
- (f) Study on the revision of the national certification examination for servicing technicians to support the changes proposed to the national certification criteria, and formalization of the technicians' certification programme (UNEP/Japan) (US \$100,000);
- (g) One workshop to prepare policy recommendations following the completed study on management of HCFC recovery in the refrigeration servicing sector (UNEP/Japan) (US \$50,000);
- (h) Demonstration project for CO₂-transcritical system in the selected supermarket (Chaoshifa); organizing two training workshops for 200 managers and technicians on HCFC management and phase-out in the supermarket sub-sector; developing training materials to promote the use of low-GWP refrigerants in the supermarket sub-sector and introducing Green Energy labelling for supermarkets; conducting meetings on the finalization of international standards, and developing performance indicators for the demonstration projects in supermarkets; and conducting overseas study tour on policy and regulation for the cold chain sector for technicians (Germany) (US \$500,000);

- (i) Outreach activities (e.g., 2019 Ozone2Climate Technologies Roadshow and Roundtable, 2019 International Workshop on the Alternatives to HCFC-22 in the Room Air-conditioner sector); promoting awareness on the preservation of ozone layer and maintaining and updating the “OzonAction in China” website (UNEP) (US \$205,000); and
- (j) Operation of the Working Group (PMU) (UNEP) (US \$255,000).

SECRETARIAT’S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

103. The consumption of HCFCs in the servicing sector in 2017 was 52,486.66 metric tonnes (mt) (2,881.42 ODP tonnes), as shown in Table 3. While the consumption is higher than the previous year, there is no maximum allowable consumption for the refrigeration servicing sector in the Agreement between the Government of China and the Executive Committee. The overall total consumption in 2017 was below the maximum allowable consumption in the Agreement with the Executive Committee.

Table 3. HCFC consumption in the servicing sector in China (2013-2017 country programme data)

HCFC	2013	2014	2015	2016	2017	Average (2009-2010)
Metric tonnes						
HCFC-22	54,467.71	56,704.98	42,557.47	47,398.35	51,482.65	64,466.58
HCFC-123	425.97	356.78	314.91	288.14	347.29	113.75
HCFC-124	119.89	96.23	-46.32	67.16	-5.71	139.56
HCFC-142b	1,491.04	518.41	1,016.42	371.44	662.43	5,338.58
Total (mt)	56,504.61	57,676.40	43,842.48	48,125.09	52,486.66	70,058.47
ODP tonnes						
HCFC-22	2,995.72	3,118.77	2,340.66	2,606.91	2,831.55	3,545.68
HCFC-123	8.52	7.14	6.30	5.76	6.95	2.30
HCFC-124	2.64	2.12	-1.02	1.48	-0.13	3.05
HCFC-142b	96.92	33.70	66.07	24.14	43.06	347.03
Total (ODP tonnes)	3,103.8	3,161.72	2,412.01	2,638.29	2,881.42	3,898.06

Progress report on implementation of the second tranche

104. UNEP provided a detailed work plan for the activities associated with the component for the Government of Germany until 2020, and included the qualification of technicians and development of training materials for the supermarket sector, assessment and study of the supermarkets in China, demonstration projects with selected supermarkets, and the Green Energy labelling for supermarkets based on European Union conditions.

105. With regard to the status of Shanghai as one of the pilot cities for capacity building, UNEP explained that the issues in signing the agreement is being discussed with the relevant departments in Shanghai; IEEO is confident that this can be finalised in 2019 and demonstration activities for the servicing sector can be initiated.

106. In describing the minimum progress so far in implementing training activities, UNEP emphasised the need to put in place the training delivery strategy first, and the identification of the training centres, to adjust these based on lessons learned from stage I. The implementation plan of technicians training

programme under stage II was reviewed and approved internally by IECO, after which the training programmes commenced in 2019.

107. With regard to specific activities included in the second tranche, UNEP clarified that a number of activities had been delayed by three to four months, (e.g., the signature of contracts with training centres and the workshop for HCFC recovery were moved to October 2018, and training workshops planned for the third quarter were moved to the fourth quarter of the year). UNEP reassured that IECO is on track to ensure that there will be no further delays in the implementation of activities in the servicing sector. UNEP also noted that further delays in the approval of tranches of the HPMP might impact the completion of activities.

108. The Secretariat noted that the tranche request included funding for the second and third tranches for the component to be implemented by the Government of Germany. It was explained that this will allow the bilateral agency to catch up with delays in project implementation resulting from the deferred second tranche, in particular, to address the immediate financial needs on the different demonstration projects (CO₂ in supermarkets) and conduct the planned capacity development measures. Combining these two tranches would also reduce administrative and transaction efforts which sometimes result in further implementation delays. Accordingly, the Secretariat agreed with the request of combining the two tranches.

109. The Government of China has submitted to the 83rd meeting a report¹⁹ on current policies that are being put in place to ensure the sustained phase-out of HCFCs in the servicing sector. UNEP reiterated that this information will be contained in a comprehensive report to be submitted by the Government of China to the 83rd meeting and will cover all sectors, including servicing.

110. Upon a request for clarification, UNEP also confirmed that there was no overlap in the funding provided for the institutional strengthening (IS) project and the awareness and outreach activities being implemented under the servicing sector, as those activities included in the servicing sector plan are not carried out through the IS.

Interest

111. Information on the interest accrued on the funding approved for the sector plans of the HPMP for China is provided at every last meeting of the year following the commissioning of a financial audit. Accordingly, information on the interest accrued in 2018 will be submitted at the 84th meeting.

Conclusion

112. The Secretariat noted that while several activities proposed in the second tranche had been delayed, outstanding issues have been addressed, allowing the full implementation of the servicing sector plan without further delays. Initial and preparatory activities including workshops were completed, the work plan for stage II has been finalised, and the groundwork has been laid for a faster implementation of the activities in this sector. It was also confirmed that there was no overlap in the funding provided for the IS project and the awareness and outreach activities being implemented under the servicing sector; and that the Government of China had submitted a comprehensive report on the sustainability of the phase-out of ODS to the 83rd meeting. The overall disbursement rate is 48 per cent.

¹⁹ UNEP/OzL.Pro/ExCom/83/11/Add.1.

RECOMMENDATION

113. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the second tranche of the servicing sector plan and the enabling programme of stage II of the HCFC phase-out management plan (HPMP) for China; and
- (b) Approving the third tranche of the servicing sector plan and the enabling programme of stage II of the HPMP for China, and the corresponding 2019-2020 tranche implementation plan, in the amount of US \$4,281,831, consisting of US \$3,270,000, plus agency support costs of US \$361,431 for UNEP, US \$500,000, plus agency support costs of US \$60,000 for the Government of Germany, and US \$80,000, plus agency support costs of US \$10,400 for the Government of Japan.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) solvent	UNDP	77 th	100 % by 2026

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	14,604.66 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2017	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22		1,595.00		5,087.50	2,831.55				9,514.05
HCFC-123				12.88	6.95				19.83
HCFC-124					-0.13				-0.13
HCFC-141b		4,008.26				396.00			4,404.26
HCFC-142b		617.50		5.85	43.06				666.41
HCFC-225ca						0.96			0.96

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	19,269.0	Starting point for sustained aggregate reductions:	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	12,161.02	Remaining:	6,704.42

(V) BUSINESS PLAN		2019	2020	2021	Total
UNDP	ODS phase-out (ODP tonnes)	28.51	31.10	34.69	94.30
	Funding (US \$)	3,167,125	3,455,062	3,853,159	10,475,346

(VI) PROJECT DATA			2016	2017	2018*	2019	2020	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits			17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)			455.2	455.2	395.4	395.4	321.2	321.2	321.2	148.3	148.3	55.0	0.0	n/a
Agreed funding (US \$)	UNDP	Project costs	2,821,937	3,777,190	2,959,930	3,229,030	3,601,083	7,888,921	7,128,589	3,664,360	5,481,592	2,707,880	4,002,054	47,262,566
		Support costs	197,536	264,403	207,195	226,032	252,076	552,224	499,001	256,505	383,711	189,552	280,144	3,308,380
Funds approved by ExCom (US \$)		Project costs	2,821,937	3,777,190										6,599,127
		Support costs	197,536	264,403										
Total funds requested for approval at this meeting (US \$)		Project costs				5,549,492*								5,549,492
		Support costs				388,464								

* The third (2018) tranche was submitted at the 82nd meeting and deferred for consideration at the 83rd meeting (decision 82/71(b)). The funds requested is according to the revised Agreement.

Secretariat's recommendation:	For individual consideration
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PROJECT DESCRIPTION

114. On behalf of the Government of China, UNDP, as the designated implementing agency, has resubmitted²⁰ a request for funding for the third tranche of the solvent sector plan of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$5,549,492, plus agency support costs of US \$388,464.²¹ The submission included a progress report on the implementation of the second tranche and the tranche implementation plan for 2019-2020.

Progress report on the implementation of the second tranche

115. The International Environmental Cooperation Center (IECO) continued to implement quota permits to solvent enterprises consuming more than 100 metric tonnes (mt) of HCFCs per year.

Enterprise-level activities

116. As of April 2018, all 24 enterprises identified as part of the previous tranches had signed contracts with IECO. Twenty of these enterprises had signed contracts with the equipment suppliers, among which 15 enterprises had provided qualified documents to IECO; three enterprises had received the equipment and had them installed in their workshops; while two are awaiting equipment delivery. The remaining four enterprises are preparing bids for equipment procurement. The total phase-out associated with these enterprises is 1,176.19 mt (129.38 ODP tonnes) of HCFC-141b, representing 28 per cent of the HCFC reduction target of 455.2 ODP tonnes for stage II of the solvent sector. The total value of the conversion of these 24 enterprises to low-GWP alternatives²² amounts to US \$20,040,546.

117. An additional 27 enterprises (mostly small and medium-sized enterprise (SMEs) with annual consumption more than five mt of HCFC-141b) had submitted proposals for conversion that would result in an additional phase-out of 436.00 mt (47.96 ODP tonnes) of HCFC-141b. The baseline verifications for 26 out of the 27 enterprises had been completed resulting in a verified HCFCs baseline consumption of 372.19 mt (40.92 ODP tonnes). One enterprise (among the 26) was required to submit additional documents to confirm its application; and another was requested to re-apply due to lack of supporting documentation. Between September and December 2018, IECO organized visits by technical experts to five enterprises to inspect project progress and discuss issues relevant to their project implementation. An overview of the progress in the implementation of the solvent sector plan is presented in Table 1.

Table 1. Progress in the implementation of the solvent sector plan in China

Status	Number of enterprises	Number of lines	HCFC consumption		Estimated date of conversion
			mt	ODP tonnes	
Enterprises conversions					
Contracts signed	24	514	1,176.19	129.38	December 2019
Contracts to be signed	26	354	372.19*	40.92	**
Total	50	868	1,548.38	170.30	n/a

* Based on baseline verification.

** Dependent on Executive Committee approval of the third tranche.

²⁰ Initially submitted for consideration at the 82nd meeting, the Executive Committee decided to defer consideration to the 83rd meeting (decision 82/71(b)).

²¹ As per the letter of 25 February 2019 from the Ministry of Ecology and Environment of China to UNDP. The amount requested for this tranche is higher than what had been originally agreed (i.e., US \$2,959,930, plus agency support costs); the Government of China requested for redistribution of tranches for the solvent sector plan as discussed in paragraphs 48 to 55.

²² KC-6, HC's or diluent, trans-1, 2-dichloroethylene and HFE, water-based cleaning agent, modified alcohol, nano silicon carbonate, F-solvents, and naphthenic aromatics.

Technical assistance

118. The following activities were implemented:

- (a) Second implementation meeting for beneficiary enterprises to discuss, review and adjust implementation plans accordingly with guidance from technical experts; a training workshop on project implementation for project managers, financial and procurement staff from the 24 enterprises was conducted;
- (b) Completed the *Technical Conversion Guideline for Medical Devices Enterprises*, and used this to train beneficiary disposable medical devices (DMD) enterprises, collected feedback on the guideline, revised this based on the feedback received, and circulated the revised guideline to participants in the annual meeting of China Association for Medical Devices Industry Medical Macromolecule Products;
- (c) Signed a contract with the China Industry Cleaning Association as implementing support agency (ISA) in January 2018; and
- (d) Proceeded with the baseline verification of 26 new enterprises through a contract with Beijing Xinghua Accounting firm.

Level of fund disbursement

119. As of February 2019, of the US \$6,599,127 approved so far, US \$6,535,370 had been disbursed by UNDP to IECO, and US \$5,616,336 by IECO to beneficiaries, as shown in Table 2. The balance of US \$919,034 will be disbursed in 2019.

Table 2. Financial report of solvent sector plan stage II of the HPMP for China (US \$)

Agency	First tranche		Second tranche		Total	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
UNDP	2,821,937	2,794,281	3,777,190	3,741,089	6,599,127	6,535,370
Disbursement rate (%)	99.0		99.0		99.0	
IECO to beneficiaries	2,796,937		2,819,399		5,616,336	
Disbursement rate (%)	99.1		74.6		85.1	

Implementation plan for the third tranche

120. The following activities will be implemented until December 2019:

- (a) *Policy actions:* IECO will continue to enforce quota management in the solvent sector, local Ecology and Environment Bureaus (EEBs) will improve their registration systems for HCFC consumers and sales; and Beijing University of Chemical Technology will conduct research on the ban of using HCFCs in the DMD sub-sector (funds from previous tranche);
- (b) *Enterprise level activities:* The first 24 enterprises will continue with conversion in order to achieve HCFC phase-out by December 2019; a workshop for these enterprises will be organized to exchange lessons learned and experiences in their project implementation to facilitate the work for succeeding participating enterprises; and HCFCs baseline consumption verification will be completed for the next batch (26) of qualified beneficiary enterprises. Contracts with these beneficiary enterprises are expected to be signed in 2019; (US \$5,131,587);

- (c) *Technical assistance:* A workshop for representatives from solvent enterprises, technical experts, industrial associations, local EEBs and other stakeholders to introduce the available alternatives, conversion costs, project implementation modality, effectiveness of the policy measures will be organized; performance verification for the first 24 enterprises to validate completion of conversions and fund disbursement will be carried out; and public awareness activities will continue (US \$185,471); and
- (d) *Project management:* IECO will continue with contract management for the 24 beneficiary enterprises and for new enterprises that will sign contracts in order to meet the phase-out targets. New beneficiary enterprises will be trained on how to implement projects funded by the Multilateral Fund (US \$232,434).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

121. Consumption of HCFCs in the solvent sector in 2017 was 3,638.4 mt (396.96 ODP tonnes), which is lower than the maximum allowable consumption established for the same year in the Agreement between the Government of China and the Executive Committee for stage II of the HPMP (Table 3).

Table 3. Consumption of HCFCs in the solvent sector

Solvent sector		2013	2014	2015	2016	2017
Maximum allowable consumption*	Mt	4,492.70	4,492.70	4,172.00	4,172.00	4,172.00
	ODP tonnes	494.2	494.2	455.2	455.2	455.2
Actual consumption**	Mt	4,258.73	4,433.23	3,815.40	3,787.98	3,638.40
	ODP tonnes	466.25	484.83	418.51	413.45	396.96
Phase-out target	Mt	n/a	272.7	0.0	354.5	n/a
	ODP tonnes	n/a	29.0	0.0	39.0	n/a

* As per the Agreement signed at the 67th meeting for stage I of the HPMP up to 2015, and as per the Agreement signed at the 79th meeting for stage II for 2016 and 2017.

**As per the country programme implementation report.

122. The reduction in HCFC consumption has been achieved through the application of the HCFC production quota and domestic sale quota issued for each producer; the HCFC consumption quotas to manufacturing enterprises using more than 100 mt; and the conversion of enterprises in stage I of the HPMP.

Status of implementation

123. In responding to the query on what new initiatives were completed for the policy and regulatory aspect of the plan, UNDP explained that the preparation for imposing a ban on the use of HCFCs in the DMD sub-sector by 1 January 2026, started in July 2018. This activity will analyse the potential impacts of the ban to the country in general and the solvent sector in particular; gather views from industry to minimize any negative impact on the enterprises, as well as propose the text for the ban.

124. At the 80th meeting, the Secretariat already noted that the funding tranches for the sector might cause difficulties with regard to expediting signature of agreements with enterprises. UNDP indicated that contracts have already been signed for all of the 24 enterprises initially identified, and that they have started or are completing the second milestone (i.e., procurement of equipment, production line construction) which would require payment of 30 per cent of their incremental capital costs. In addition, the new 27 SMEs are expected to complete verifications of consumption and enter into contracts with IECO during the first

quarter of 2019, which will require additional financial resources to ensure the timely implementation of their conversion.

125. Based on this, the Government of China and UNDP requested an adjustment to the tranche distribution for the years 2019-2026, to meet the cash flow needed for signing up new enterprises, and timely payment according to their implementation progress and the established milestones. The proposed tranche adjustment also reflects adjustments to incremental operating cost payments which will be made only in 2020 and 2021 once the first set of enterprises had completed their conversions. UNDP also reiterated that continued delays in the tranche approvals may compromise the ability of the Government of China to meet the phase-out agreed.

126. The redistribution of tranches is presented in paragraphs 48 to 55, under the section Revision of the Agreement for China's stage II of the HPMP.

Project implementation and monitoring unit (PMU)

127. Noting that, in line with decision 81/46(b), implementing agencies will start using financial reporting format for PMU expenditures agreed at the 81st meeting²³ for 2019 tranches, UNDP provided the best estimate of PMU expenditures for the present meeting, summarized in Table 4.

Table 4. PMU expenditures, stage II of the solvent sector plan in China

Items	Description	First tranche	Second tranche	Total (US \$)
Project Staff	Programme management staff	36,154	54,562	90,716
	Other supporting staff, including financial, procurement, legal support	27,811	41,970	69,781
Agency operating expenses	Daily operating expenses, including domestic travel, meetings, office facilities and equipment	34,092	51,450	85,542
Consulting Services	Consulting institutions and experts hired for project evaluation, financial and technical verification, technical review, bidding evaluation, technical support. Also include contractual staff to help with high workload or special events, such as meetings, workshops, and translation-related costs.	38,943	58,770	97,713
Total PMU disbursements for tranche 1 and tranche 2		137,000	206,752	343,752

Interest

128. Information on the interest accrued on the funding approved for the sector plans of the HPMP for China is provided at every last meeting of the year following the commissioning of a financial audit. Accordingly, information on the interest accrued in 2018 will be submitted to the 84th meeting.

Sustainability of the HCFC phase-out

129. In explaining how the policy framework and enforcement will be strengthened to ensure sustained phase-out of HCFC in the solvent sector, UNDP indicated that the Government of China would promulgate the ban on the use of HCFCs as solvent in the sector before the complete phase-out of HCFCs. Additionally, in line with decision 82/65, the Government of China submitted to the present meeting the review of current monitoring, reporting, verification and enforcement systems under the HCFC consumption and production

²³ Annex X of document UNEP/OzL.Pro/ExCom/81/58.

phase-out management plans (HPMP and HPPMP),²⁴ including the action plan to strengthen legislation and its implementation.

Conclusion

130. The Secretariat noted that the solvent sector plan is progressing well with all 24 enterprises selected having signed their contracts with IECO, and started the procurement of equipment. The conversion of these 24 enterprises will result in the phase-out of 129.38 ODP tonnes of HCFC-141b, representing 28 per cent of the HCFC reduction target for stage II of the solvent sector plan. In addition, a second set of 26 enterprises have been identified with an estimated phase-out of 372.19 mt (40.92 ODP tonnes) of HCFC-141b. After verification of consumption, contracts for these enterprises are expected to be signed in 2019. The Government of China is also requesting for a reallocation of the tranches from 2018-2026 which will facilitate the overall implementation of the solvent sector plan to completely phase out the use of HCFC-141b by 2026. The disbursement rate is 85 per cent. The Secretariat supports the request to adjust the funding tranches for the solvent sector to ensure efficient implementation of the plan. In view of the implementation progress, the Secretariat recommends approval of the third tranche of the solvent sector plan.

RECOMMENDATION

131. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the second tranche of stage II of the solvent sector plan of stage II of the HCFC phase-out management plan (HPMP) for China; and
- (b) Approving the third tranche of the solvent sector plan of stage II of the HPMP for China, and the corresponding 2018-2019 tranche implementation plan, in the amount of US \$5,549,492, plus agency support costs of US \$388,464 for UNDP.

²⁴ UNEP/OzL.Pro/ExCom/83/11/Add.1.

Annex I

TEXT TO BE INCLUDED IN THE UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF CHINA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN
(Relevant changes are in bold font for ease of reference)

17. This updated Agreement supersedes the Agreement reached between the Government of China and the Executive Committee at the 79th meeting of the Executive Committee.

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Consumption targets													
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	16,978.9	16,978.9	15,048.1	15,048.1	11,772.0	*	*	*	*	*	*	n/a
1.3.1	Maximum allowable consumption of Annex C, Group I substances in the ICR sector (ODP tonnes)	2,162.5	2,162.5	2,042.4	2,042.4	1,609.9	1,609.9	**	**	**	**	**	n/a
1.3.2	Maximum allowable consumption of Annex C, Group I substances in the XPS foam sector (ODP tonnes)	2,286.0	2,286.0	2,032.0	2,032.0	1,397.0	1,397.0	1,397.0	762.0	762.0	165.0	0.0	n/a
1.3.3	Maximum allowable consumption of Annex C, Group I substances in the PU foam sector (ODP tonnes)	4,449.6	4,449.6	3,774.5	3,774.5	2,965.7	2,965.7	2,965.7	1,078.4	1,078.4	330.0	0.0	n/a
1.3.4	Maximum allowable consumption of Annex C, Group I substances in the RAC sector (ODP tonnes)	3,697.7	3,697.7	2,876.0	2,876.0	2,259.7	2,259.7	***	***	***	***	***	n/a
1.3.5	Maximum allowable consumption of Annex C, Group I substances in the solvent sector	455.2	455.2	395.4	395.4	321.2	321.2	321.2	148.3	148.3	55.0	0.0	n/a
Funding industrial and commercial refrigeration and air conditioning (ICR) sector plan													
2.1.1	Sector Lead IA (UNDP) agreed funding (US \$)	13,368,756	20,000,000	12,000,000	16,000,000	16,000,000	11,776,041	-	-	-	-	-	89,144,797
2.1.2	Support costs for UNDP (US \$)	935,813	1,400,000	840,000	1,120,000	1,120,000	824,323	-	-	-	-	-	6,240,136
Funding extruded polystyrene (XPS) foam sector plan													
2.2.1	Sector Lead IA (UNIDO) agreed funding (US \$)	7,514,867	8,732,614	8,000,000	9,243,486	9,600,000	14,788,765	11,400,000	11,300,000	9,550,000	9,600,000	11,971,763	111,701,495

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
2.2.2	Support costs for UNIDO (US \$)	526,041	611,283	560,000	647,044	672,000	1,035,214	798,000	791,000	668,500	672,000	838,023	7,819,105
2.2.3	Sector cooperating agency (Germany) agreed funding (US \$)	-	267,386	-	356,514	-	211,235	-	-	250,000	-	-	1,085,135
2.2.4	Support costs for Germany (US \$)	-	31,877	-	42,502	-	25,182	-	-	29,804	-	-	129,365
Funding polyurethane (PU) foam sector													
2.3.1	Sector Lead IA (World Bank) agreed funding (US \$)	7,045,027	0	0	20,300,000	20,300,000	20,000,000	15,700,000	15,600,000	14,500,000	14,000,000	14,026,183	141,471,210
2.3.2	Support costs for World Bank (US \$)	493,152	0	0	1,421,000	1,421,000	1,400,000	1,099,000	1,092,000	1,015,000	980,000	981,833	9,902,985
Funding room air conditioning (RAC) sector plan													
2.4.1	Sector Lead IA (UNIDO) agreed funding (US \$)	14,671,089	16,000,000	0	18,000,000	14,000,000	14,000,000	11,581,816					88,252,905
2.4.2	Support costs for UNIDO (US \$)	1,026,976	1,120,000	0	1,260,000	980,000	980,000	810,727	-	-	-	-	6,177,703
2.4.3	Sector cooperating agency (Italy) agreed funding (US \$)	891,892	-	-	-	-	-	-	-	-	-	-	891,892
2.4.4	Support costs for Italy (US \$)	108,108	-	-	-	-	-	-	-	-	-	-	108,108
Funding service sector plan, including enabling programme													
2.5.1	Sector Lead IA (UNEP) agreed funding (US \$)	3,299,132	2,570,000	3,270,000	3,370,000	3,570,000	2,810,868	-	-	-	-	-	18,890,000
2.5.2	Support costs for UNEP (US \$)	364,651	284,061	361,431	372,484	394,590	310,683	-	-	-	-	-	2,087,900
2.5.3	Sector cooperating agency (Germany) agreed funding (US \$)	300,000		300,000	200,000		200,000	-	-	-	-	-	1,000,000
2.5.4	Support costs for Germany (US \$)	36,000	-	36,000	24,000	-	24,000	-	-	-	-	-	120,000
2.5.5	Sector cooperating agency (Japan) agreed funding (US \$)	80,000	80,000	80,000	80,000	80,000		-	-	-	-	-	400,000
2.5.6	Support costs for Japan (US \$)	10,400	10,400	10,400	10,400	10,400		-	-	-	-	-	52,000
Funding solvent sector plan													
2.6.1	Overall Lead IA (UNDP) agreed funding (US \$)	2,821,937	3,777,190	5,549,492	6,070,000	5,570,000	6,060,000	5,440,000	5,210,000	1,560,000	1,200,000	4,003,947	47,262,566
2.6.2	Support costs for UNDP (US \$)	197,536	264,403	388,464	424,900	389,900	424,200	380,800	364,700	109,200	84,000	280,276	3,308,380
Overall funding													
3.1	Total agreed funding (US \$)	49,992,700	51,427,190	29,199,492	73,620,000	69,120,000	69,846,909	44,121,816	32,110,000	25,860,000	24,800,000	30,001,893	500,100,000
3.2	Total support cost (US \$)	3,698,676	3,722,023	2,196,296	5,322,330	4,987,890	5,023,602	3,088,527	2,247,700	1,822,504	1,736,000	2,100,133	35,945,681
3.3	Total agreed costs (US \$)	53,691,376	55,149,213	31,395,788	78,942,330	74,107,890	74,870,511	47,210,343	34,357,700	27,682,504	26,536,000	32,102,026	536,045,681
Phase-out and remaining eligible consumption													
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)												3,878.80
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)												1,479.72
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)												6,136.79
4.2.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)												2.70
4.2.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)												0.00
4.2.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)												7.43
4.3.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)												0.00

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
4.3.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)												0.00
4.3.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)												3.07
4.4.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)												4,187.18****
4.4.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)												1,698.00
4.4.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)												0.00
4.5.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)												646.02
4.5.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)												267.47
4.5.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)												557.04
4.6.1	Total phase-out of HCFC-225 agreed to be achieved under this Agreement (ODP tonnes)												1.13
4.6.2	Phase-out of HCFC-225 to be achieved in previously approved projects (ODP tonnes)												0.00
4.6.3	Remaining eligible consumption for HCFC-225 (ODP tonnes)												0.09

* Maximum allowable total consumption of Annex C, Group I substances for the period 2021 to 2026 would be determined at a later date, but would in no case be greater than 11,772 ODP tonnes prior to 2025, and no greater than 6,131 ODP tonnes thereafter.

** Maximum allowable total consumption of Annex C, Group I substances in the ICR sector for the period 2021 to 2026 would be determined later, but would in no case be greater than 1,609.9 ODP tonnes prior to 2025, and no greater than 781 ODP tonnes thereafter.

*** Maximum allowable total consumption of Annex C, Group I substances in the RAC sector for the period 2021 to 2026 would be determined later, but would in no case be greater than 2,259.7 ODP tonnes prior to 2025, and no greater than 1,335 ODP tonnes thereafter.

**** In accordance with decision 68/42(b), includes 137.83 ODP tonnes of HCFC-141b contained in exported pre-blended polyols.

Note: Date of completion of stage I as per stage I Agreement: 31 December 2019.

Annex II

REVISED TRANCHE DISTRIBUTION AMONG SECTORS OF STAGE II OF THE HPMP FOR CHINA

Table 1. Tranche distribution as per decision 79/35 (including support cost)

Sector*	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
PU foam	7,538,179	11,289,000	10,117,500	13,525,500	13,525,500	21,300,000	16,720,500	16,614,000	11,182,500	13,951,500	14,937,885	150,702,064
RAC	16,698,065	17,040,000	19,170,000	14,910,000	14,910,000	12,334,634	-	-	-	-	-	95,062,699
Solvent	3,019,473	4,022,707	3,152,325	3,438,917	3,835,153	8,401,701	7,591,947	3,902,543	5,837,895	2,883,892	4,262,188	50,348,742
XPS	8,040,908	9,599,496	8,520,000	10,243,329	10,224,000	15,986,452	12,141,000	12,034,500	10,450,554	10,224,000	12,749,928	120,214,166
ICR	14,304,569	21,300,000	12,780,000	17,040,000	17,040,000	12,541,484	-	-	-	-	-	95,006,053
Servicing	4,090,183	2,944,461	4,057,831	4,056,884	4,054,990	3,345,551	-	-	-	-	-	22,549,900
Total	53,691,376	66,195,664	57,797,657	63,214,630	63,589,643	73,909,822	36,453,447	32,551,043	27,470,949	27,059,392	31,950,000	533,883,625

*PU= polyurethane foam; XPS= extruded polystyrene foam; RAC=room air-conditioning manufacturing and heat pump water heaters; ICR=industrial and commercial refrigeration and air conditioning

Table 2. Revised tranche distribution as proposed by the Government of China (including support cost)

Sector	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
PU	7,538,179	-	-	21,721,000	21,721,000	21,400,000	16,799,000	16,692,000	15,515,000	14,980,000	15,008,016	151,374,195
RAC	16,698,065	17,120,000	-	19,260,000	14,980,000	14,980,000	12,392,543	-	-	-	-	95,430,608
Solvent	3,019,473	4,041,593	*5,937,956	6,494,900	5,959,900	6,484,200	5,820,800	5,574,700	1,669,200	1,284,000	4,284,223	50,570,946
XPS	8,040,908	9,643,160	*8,560,000	10,289,546	10,272,000	16,060,396	12,198,000	12,091,000	10,498,304	10,272,000	12,809,786	120,735,100
ICR	14,304,569	21,400,000	*12,840,000	17,120,000	17,120,000	12,600,364	-	-	-	-	-	95,384,933
Servicing	4,090,183	2,944,461	*4,057,831	4,056,884	4,054,990	3,345,551	-	-	-	-	-	22,549,900
Total	53,691,376	55,149,213	31,395,788	78,942,330	74,107,890	74,870,511	47,210,343	34,357,700	27,682,504	26,536,000	32,102,026	536,045,681

*Tranche not approved at the 82nd meeting and resubmitted to the 83rd meeting.

Table 3. Differences between Table 1 and Table 2

Sector	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
PU	-	-11,289,000	-10,117,500	8,195,500	8,195,500	100,000	78,500	78,000	4,332,500	1,028,500	70,131	672,131
RAC	-	80,000	-19,170,000	4,350,000	70,000	2,645,366	12,392,543	-	-	-	-	367,909
Solvent	-	18,886	2,785,631	3,055,983	2,124,747	-1,917,501	-1,771,147	1,672,157	-4,168,695	-1,599,892	22,036	222,203
XPS	-	43,663	40,000	46,217	48,000	73,944	57,000	56,500	47,750	48,000	59,859	520,933
ICR	-	100,000	60,000	80,000	80,000	58,880	-	-	-	-	-	378,880
Servicing	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-11,046,451	-26,401,869	15,727,700	10,518,247	960,689	10,756,896	1,806,657	211,555	-523,392	152,026	2,162,056